THE MARINE REVIEW

VOL. 46 CLEVELAND APRIL, 1914 NEW YORK No. 4

The Port of Midland

The Dry Dock Has Put in a Busy Season— A Very Thriving Port and Its Industries

THE Midland Dry Dock Co., Midland, Ont., has put in a busy winter, employing upwards of 150 men. The plant is capable of building tugs and other craft up to 150 ft. in length and of doing repair work of all kinds above the water line. The plant is operated by hydro-electric power with a 24-hour service and is well equipped with air tools of all descriptions. The company recently installed a new set of very heavy rolls, manufactured by Wickes Bros., of Saginaw, Mich., and capable of handling any plate or frame from any steamer on the lakes.

The company has also added a large new punching machine from the same manufacturer, giving them two sets of punching machines. The plant is thoroughly equipped with the necessary machines to do any kind of repair work promptly. The fleet wintering at Midland aggregated 25 steamers and the company made extensive repairs on the steamers Collingwood, Glenmavis, Fairmount, Stormount, Empress of Midland, Toiler and Renvoile. The company installed a new set of boilers and smoke-boxes on the steamer Strathcona, as well as supplying six steel masts to vessels wintering at the port.

Growing Fast

The town of Midland is growing quite fast and confidence is expressed by its inhabitants that within a very few years it will be, next to Buffalo, the greatest grain handling port on the great lakes. About 40,000,000 bushels of grain passed through the port during the season of 1913.

The approaches from Georgian Bay to Midland harbor have been greatly improved in the past two years. Gas buoys and new ranges have replaced the old ones and the approaches are much safer than they were. The bay is about 6 miles in length and about 2 miles in width and the harbor itself is well dredged with practically 25 ft. of water at all elevators and docks.

The coal dock of the Midland Coal Dock Co. has been in operation for about ten years and has two whirlies which work in season 22 hours per day and are capable of handling up to 2,000 tons of coal every 24 hours. The docks have a storage capacity of about 20,000 tons, and have chutes for fueling steamers with a capacity of 300 tons, the price being the same at Midland as it is at the Sault or Detroit. Last season the dock handled about 100,000 tons of coal. Vessels of any size can be accommodated, whether loaded or light.

Grain Elevators

The harbor is well equipped with grain elevators. The up-town elevator at Midland is a one-legged wooden house with a capacity for storing 1,000,000 bushels, and will average 10,000 bushels per hour. During the season of 1913 this elevator handled 4,250,000 bushels of grain. The elevator is managed by Nye, Jenks & Co., of Chicago, through the Grand Trunk railway system. The dock can accommodate steamers up to 500 ft. in length. The approaches to this elevator are from the open lake and there is plenty of water.

The Grand Trunk Pacific elevator at Midland is a solid reinforced concrete structure with two legs. The capacity of the elevator is 2,000,000 bushels storage, and the legs will elevate an average of about 25,000 bushels per hour. This elevator is operated by electric motor power and is one of the finest on the Canadian lakes. Last season it received over 14,000,000 bushels of grain and has elevated 315,000 bushels in 14 hours and 20 minutes. The docks are solid concrete, 800 ft. long. The approaches to this elevator are good and the channel opposite the elevator is dredged to a width of 300 ft. and a depth of 25 ft. During 1913 the steamer W. P. Snyder Jr. delivered a cargo of 464,000 bushels of wheat to this elevator, the largest cargo of grain ever transferred on the great lakes.

The Aberdeen elevator at Midland is built of steel, is absolutely fireproof and has a capacity of 1,000,000 bushels. It is a one-legged house with an elevating capacity that will average 12,000 bushels per hour. The docks are wooden, 600 ft. long, and can accommodate the largest steamer on the lakes. This elevator last season handled 7,900,000 bushels of grain and is served also by the Grand Trunk Railway System. The approaches are from the open lake and the best of water obtains everywhere.

Port McNicoll is situated 2½ miles from Midland, just around the point in the bay, and is the Georgian Bay terminus of the Canadian Pacific. The Canadian Pacific operates a line of steamers between Port McNicoll and Fort William with sailing five times a week. The capacity of the Canadian Pacific elevator at Port McNicoll is 4,000,000 bushels and plans are being prepared for adding another 2,000,000.

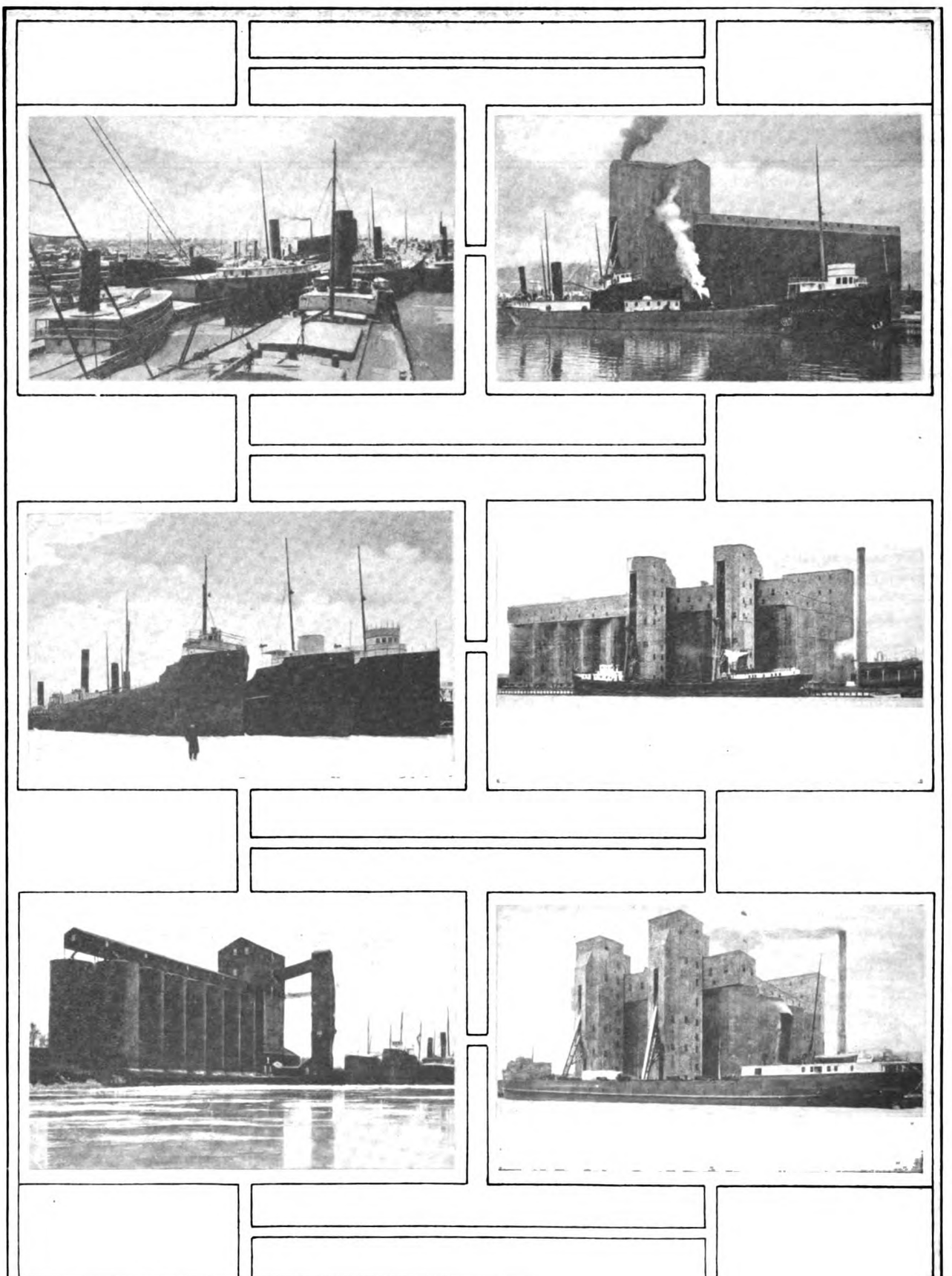
This is a two-legged house with a capacity averaging 20,000 bushels per hour and is fireproof, being built of reinforced concrete throughout. The main slip is about 9,000 ft. long and 600 ft. wide. The elevators and coal dock are situated on one side of the slip and the freight sheds, each 600 ft. in length, on the other side. This elevator handled last season 13,571,000 bushels of grain.

Canadian Iron Corporation

The plant of the Canadian Iron Corporation consists of two blast furnaces with a capacity of about 400 tons in 24 hours. The plant consumes about 200,000 tons of ore annually, but is shut down at present owing to the slump in the iron trade.

The port of Midland at present contains about 7,000 people. Penetang, two and a half miles from Midland on

Generated on 2024-07-27 01:44 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



1—PART OF FLEET WINTERING AT MIDLAND; 2—UPTOWN ELEVATOR AT MIDLAND; 3—EMPRESS OF MIDLAND, MIDLAND KING AND MIDLAND PRINCE; 4—C. P. R. ELEVATOR AT PORT McNICOLL; 5—ABERDEEN ELEVATOR, MIDLAND; 6—GRAND TRUNK PACIFIC ELEVATOR, MIDLAND

Generated on 2024-07-27 01:44 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

one side of the harbor, has 3,500 people, and Port McNicoll and Victoria Harbor, on the other side, have also about 2,500 people.

Work at Polson Iron Works

The Polson Iron Works, Toronto, is extremely busy on general repairs. The Dominion government steamer Speedway is having a new deck and general overhauling of her interior work. The steamer Senator Derbyshire, belonging to the Brockville Transportation Co.'s fleet, is having the old boiler removed and replaced with a new Scotch boiler, 13 ft. by 11 ft. The machinery of the steamer Dundurn is also being removed and will be installed in the ferry now building at Levis, Que., for the Canadian Steamship Lines. Dredges Nos. 1, 2 and 3, belonging to the city of Toronto harbor commissioners, are undergoing extensive repairs, including new outfit of discharge piping.

The company has also the following new work under way:

Three steam steel lighters for the department of railways and canals, Dominion government. These lighters are each of the following dimensions:

Length	128 ft.	0 in.
Breadth, molded	21 ft.	6 in.
Depth	10 ft.	0 in.
Draught	7 ft.	0 in.

These lighters are to be completed by the beginning of June, when they will leave for Hudson bay where they are to be used at Port Nelson, the new terminal being established by the government.

One buoy steamer for the department of marine and fisheries, Dominion government, to the following dimensions:

Length	164 ft.	0 in.
Breadth molded	30 ft.	0 in.
Depth, molded	13 ft.	0 in.

This buoy steamer to be used by the government for work in the St. Lawrence, and great lakes.

Two dredge hulls and one steel derrick scow for the Canadian Stewart Co., Ltd. The dredge hulls each 170 ft. long by 42 ft. beam by 12 ft. depth, and to be fully equipped as 24-in. suction dredges. The steel derrick scow is 140 ft. long by 40 ft. beam by 11 ft. depth. Both these dredges and the scow are to be used on Toronto harbor improvement work.

Six steel dump scows for use on Quebec harbor improvements. Three of these scows are seven-pocket, of 500 yds. capacity. Length, 144 ft; breadth molded, 31 ft.; depth molded, 11 ft. 6 in. To be built of steel throughout, with oak doors in hoppers. To be operated by patent steam winding gear, with double cylinder 8 in. by 8 in. engines placed in hold.

Three five-pocket dump scows of 300 yds. capacity each. Dimensions: Length, 108 ft.; breadth molded, 28 ft.; depth molded, 9 ft. Built of steel throughout, with oak doors in hoppers. Doors to be operated by hand through worm gear.

One twin screw car ferry for the Ontario Car Ferry Co., to run between Cobourg and Charlotte. This ferry to have a capacity of 28 standard coal cars of 68 tons gross weight each.

Length over all	318 ft.	0 in.
Beam, molded	56 ft.	0 in.
Draught, loaded	16 ft.	3 in.

The company just completed a steel car ferry for the Canadian Pacific railway, at Nelson, B. C., and a complete machinery outfit for a 3½-yd. dipper dredge, the hull of which has been built by the government at Ottawa.

The company is also building twin triple expansion engines with cylinders 11 in. and 18 in. and 30 in. by 20-in. stroke, for the new steamer Lady of Lake, for Lake Winnipeg, for the Dominion government; besides which it has a considerable number of marine boilers and engines on hand for various other parties.

Collinwood Ship Building Co.

The Collingwood Ship Building Co., Collingwood, Ont., has put in a fairly active season. The company has repaired some plate and frame damage along the bluff of the bows of the steamers Glenmount, Kinmount and Westmount, caused by continued locking through the canals from Port Colborne to Montreal. The company has a small side damage job on the Agawa, and some bow damage work on the steamer Canadian. Repairs to the steamer Meaford include a steel deck and steel hatch covers on top of her coal bunkers in the deck house, as well as fender strakes on each side of the bow. Some small repair work is being done on the government dredge Industry as well as general repairs to the boilers and machinery of the few ships that are harboring at Collingwood. The company has also placed new boilers and new steam piping on the Canadian Pacific steamer Manitoba, as well as fitting weather bulwarks forward and new hawse pipes and stockless anchors. Altogether the company is finishing up about $1,250,000 worth of contract work.

Bulk Freighter W. Grant Morden

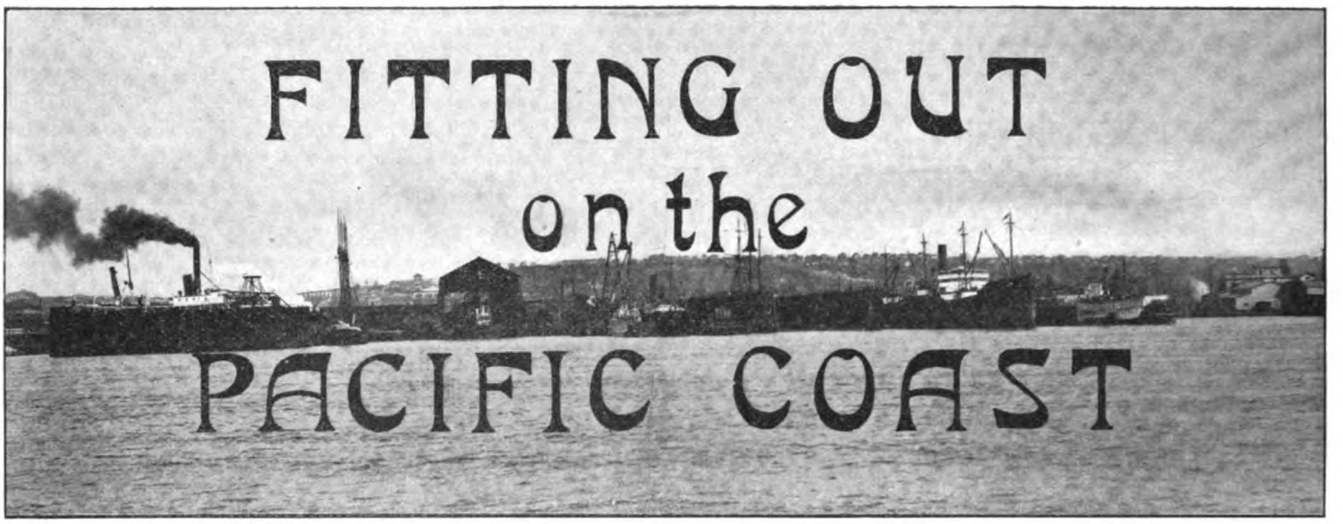
The bulk freighter W. Grant Morden, building for the Norcross interests at the Port Arthur yard of the American Ship Building Co., was launched April 4. This vessel is the largest on the lakes, being 625 ft. over all, 604 ft. between perpendiculars, 59 ft. beam and 32 ft. deep. She has double sides 5 ft. 6 in. wide, and the same depth of water bottom. Her hatches, 38 in number, are spaced 12 ft. centers. There is 15 ft. between No. 1 and No. 2 hatches for the location of the deck winches and 11 ft. 6 in. at the after end for the same purpose. The steamer is being built on the Isherwood system and to Lloyds class. The engine is triple-expansion, 24, 39, 65 in. diameter by 42-in. stroke, and the boilers are of the Scotch type, 16 ft. diameter and 11 ft. 4 in. long, allowed 180 lb. steam pressure. Altogether 33 vessels were docked at this yard with a tonnage of 60,000 gross register, as well as a number of vessels repaired in the harbor and at the works which did not require docking.

The New Howard M. Hanna Jr.

The new bulk freighter which Capt. W. C. Richardson is building at the Cleveland yard of the American Ship Building Co., to replace the Howard M. Hanna Jr., lost in the November storm, will also be named the Howard M. Hanna Jr. Her length over all is 524 ft. beam 54 ft. and depth 30 ft., and she will carry 9,000 tons. A number of new features are embodied in this vessel. She will have 18-in. deadlights, instead of windows. In fact the only windows in the vessel will be in the pilot house. The skylight over her engine will be all steel with four deadlights in each section, and the skylight over the cabin or dining room will be similar. All rivets in the vessel have been increased in size ⅛ in. over the former type. She will have 15 hatches spaced 24 ft. center, 12 ft. for and aft, with 15 lb. plate covers. The covers will be 2 ft. 10 in. wide and will have the Mulholland hatch fasteners of special design for the large hatch. She will be of unusually staunch construction and is being built under the supervision of the Great Lakes Register.

The Diesel motor liner Mississippi, launched Feb. 11 at Harland & Wolff's yard on the Clyde for the Atlantic Transport Line, will be fitted with two four-stroke cycle single-acting Diesel engines, each coupled direct to its line of shafting; and two four-stroke, cycle single-acting auxiliary Diesel engines, each coupled direct to its dynamo and air compressor. Each of the main engines has six cylinders 26⅜ in. in diameter and 39 in. stroke, and work at 105 revolutions per minute. The normal horsepower will be 1,600 i. h. p. for each engine. The vessel is 383 ft. 9 in. long over all, and 50 ft. 4 in. extreme beam. She has a gross tonnage of about 5,000.

Generated on 2024-07-27 01:44 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



WATER FRONT OF THE SEATTLE CONSTRUCTION & DRY DOCK CO.'S PLANT

NO YARD on the Pacific coast is better equipped for the prompt repair of vessels than that of the Seattle Construction & Dry Dock Co., Seattle. The company has sufficient dry dock facilities to dock any vessel that is likely to visit the port, and has a full equipment of cranes and machine tools. At the present time the yard is crowded with vessels that are being repaired and are fitting out for the season.

The steamer City of Seattle, of the Pacific Coast Steamship Co.'s fleet is undergoing most extensive repairs. The sides from the main deck up to the upper deck, formerly of wood, are being rebuilt of steel. The entire main deck, the galley, pantry, dining room, officers' crews, crew's quarters and cargo spaces are being entirely renewed. The observation room on the upper deck is being extended and a new pilot house and texas built. The steamer is also receiving a new battery of Scotch boilers, new winches and cargo-handling gear, new and complete electric wiring and new heating system. The machinery is also receiving a general overhauling.

Transformed into Oil Burner

The steamship Governor, of the same fleet, is undergoing alterations consisting of the installation of fuel oil tanks and oil-burning equipment. The Dahl oil-burning system of mechanical atomization will be installed.

The steamer President, of the same company, recently underwent similar alterations and is now in successful operation. Among the vessels now at the yard undergoing repairs of various kinds are the following: Iroquois, Bellingham, Admiral Sampson, Knickerbocker, Manhattan, New England, W. B. Flint Abner Coburn, Azelia, Pioneer, San Juan, Major Samuel J. Ringgold, Oceana Vance, Dora, Santa Cruz.

The Union Iron Works Co., San Francisco, have been very busy on fitting out and repair work since the first of the year. The two large graving docks at Hunter's Point and the two floating docks at the yard have been in constant use and a number of vessels have had to wait their turn. The largest repair job has been the Union oil steamer, Santa Maria. Practically her entire bottom plating had to be renewed, faired and replaced. The British oil tanker Cowrie, which struck on the bar in entering port, is also in dry dock for extensive repairs. Considerable work has also been done on the American-Hawaiian steamers Nevadan, Nebraskan, Columbian, Isthmian, Georgian, Honolulan and Arizonan. The Standard Oil Co. has also sent quite a fleet to this yard for the usual spring fit-out. Considerable repair work has been done on the Wilhelmina, Matsonia and Lurline of the Matson Navigation Co.'s fleet.

The ship yard of Nilson & Kelez, Seattle, is quite busy on new work and general repairs. At present the company is building a cannery tender for the Pacific American Fisheries Co., a halibut schooner for Moe Bros., of Seattle, and has just received an order for a ferry steamer from the Juneau Ferry & Navigation Co., to be 93 ft. long, 19 ft. beam and 11 ft. 6 in. deep. The ferry will be equipped with a 250 H. P. Speedway gas engine.

The Moore & Scott Iron Works, San Francisco, some time ago placed the ferry steamer Sausalito in dry dock to receive a new rudder and other hull repairs caused by striking the bulkhead at Sausalito during a heavy fog. The steamer Mackinaw, owned by the Robert Dollar Co., was placed in dry dock for cleaning and painting and general fit-out. Extensive repairs were also made to the machinery of the steamer Pleiades. The Key Route steamer, San Francisco, also underwent general overhauling at the yard.

New Ferry Steamer

The Commercial Boiler Works, Seattle, recently completed the job of converting the bark Nuuanu into an oil barge. New boilers have also been provided for the steamers Atlas and Sampson, as well as fuel tanks for the fishing steamer San Juan.

The ferry steamer Alameda, built for the Southern Pacific railway by the West Oakland shipyard, went into commission on Feb. 23 and will cut the running time between Oakland and San Francisco by 5 minutes. Like the Contra Costa, the paddle wheels on each side will be operated by separate engines, four in all, allowing the vessel to be turned around in her own length in time of emergency. Special safety features consist of seven bulkheads up to main deck and five more extending to platform deck, any one of which may be pierced during collision without endangering the vessel. The cost is estimated at $500,000. On the upper deck ample provision is made for many outside seats and the greater portion of these are protected overhead and on either side. The interior finish is of mahogany. Ventilation is provided by special ventilators on both decks. The dining room is located beneath the main deck, seating 76 passengers. The vessel is equipped with electric lights and searchlights for navigation at nights. Oil will be used for fuel. The general dimensions are: 292 ft. 4 in.

Generated on 2024-07-27 01:45 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

length over guards, 273 ft. outside of stern posts; 75 ft. 4 in. overguard breadth amidship; 42 ft. moulded beam; 17 ft. 3 in. from bottom of keel to top of main deck, amidship.

The Southern Pacific Co. is building at its yard in San Francisco a side-wheel, steel-hull, double-ended passenger ferry steamer, 292 ft. 4 in. over all, fitted with four horizontal tandem compound engines and four Babcock & Wilcox boilers. This ferry steamer will be named Alameda. The company is also building a wooden passenger and freight car transfer steamer, 433 ft. 4 in. long, fitted with four horizontal simple engines and eight Scotch dryback boilers. The company also has at the ship yard the knocked-down steel hull for a passenger ferry steamer similar to the Alameda, which will be built during the present year. This vessel will be named Santa Clara.

The oil tanker Frank H. Buck was launched Feb. 11 from the yard of the Union Iron Works. She is building for the Associated Oil Co., of San Francisco, and is the first vessel to be built on the Isherwood system on the Pacific coast. The Frank H. Buck is 426 ft. 9 in. long, 55 ft. 4 in. wide and 31 ft. 8 in. molded depth. The propelling machinery consists of one triple-expansion engine, with cylinder diameters 26½, 45 and 75 in., with stroke of 48 in. The Buck has four Scotch boilers 14 ft. and 11 ft. 9 in. long.

The hull is of steel with wood superstructure, double-ender with rudders at each end. The propelling machinery consists of two inclined 16 x 72-in. high pressure engines built by the Willamette Iron & Steel Works, of Portland, Ore. The paddle wheel diameter is 13 ft. 2 in., of the feathering type. The Leschi is equipped with Ballin water tube boilers having 4,200 sq. ft. of heating surface. The ferry was designed by Fred A. Ballin, naval architect, with L. E. Geary, naval architect, supervising the construction of the hull.

The Canadian Pacific Railway Co. is completing at Okanagan Landing, B. C., for its British Columbia lake and river service, a sister ship to the steamer Nasookin. The name of this new steamer will be the Sicamous, and she will be ready for service about June 30. The company has just completed a steam tug for Okanagan Lake and a steel car barge for Kootenay Lake. It is doing no outfitting except the overhauling of the wooden stern wheel steamer Kuskanook.

The Alaska Steamship Co., Seattle, Wash., is altering and improving the officers' quarters and first class passenger accommodations of the steamships Mariposa and Alameda. The work is being done at the company's dock by the company's own workmen.

John Wilson, Seattle, Wash., has been given contract to build a passenger steamer for the Kitsap County Transportation Co., to be equipped with 180 H. P. Diesel heavy oil engine manufactured by the New London Ship & Engine Co., Groton, Conn.

The Puget Sound Boiler Works, Seattle, Wash., is rebuilding and installing fuel tanks in the fishing steamer Zapora. The boilers are to be of the Scott patent water tube type.

The steel ferryboat Leschi, built for the Seattle port commission by J. F. Duthie & Co., Seattle, for service on Lake Washington, ran her steam trials lately with great success.

The ferry has a length over all of 169 ft., breadth over guard 52 ft. 4 in., draught 4 ft. 9 in., speed 14 miles per hour, displacement 415 net tons.

The ferry has accommodations for 30 vehicles and 1,000 passengers, her main cabin having a seating capacity of 275.

Handling Coal at Baltimore

The Rivers and Harbors Appropriation Bill pending in congress is of wide significance to the coal trade of Baltimore. The bill contains a provision for the expending of $112,000 by the government in deepening the Baltimore harbor to 35 feet, making it possible for the largest merchant vessels and colliers of the United States navy to load coal at the Maryland port.

It is known that the Baltimore & Ohio railroad plans to enlarge its coal terminal at Curtis Bay, in the Baltimore harbor, to handle the larger volume of coal traffic which will be forthcoming after the harbor has been deepened.

In discussing the proposed legislation with Congressmen Linthicum and Talbott, of the Maryland delegation, President Daniel Willard stated that the Baltimore & Ohio railroad will build an additional steel pier at Curtis Bay, which will double the capacity of the present facilities there. President Willard said that the time of constructing the new pier, which will cost more than $1,000,000, will be dependent upon the financial condition of the railroad. It is known, however, that the pier will be erected as soon as practicable after the completion of the harbor improvement.

Eastern coal operators, and particularly those that are doing business through the port of Baltimore, predict a rapid growth of the trade when the proposed extension of the facilities shall have been put into operation. Baltimore is a logical point, it is pointed out, for handling a large volume of coal. It is geographically located near the coal fields of West Virginia, southwestern Pennsylvania and Ohio; and now that the improvements which have been made by the Baltimore & Ohio on an extensive scale have been put into service, a low-grade route has been established which makes it possible to handle the longest trains expeditiously and economically.

The need of additional facilities to handle the growing coal traffic has been recognized by the Baltimore & Ohio management for some time past, and the decision to enlarge the Curtis Bay terminal by the construction of an additional pier is due to the growth of export and coastwise trade. Besides the vessels engaged in foreign trade, and the commercial ships which handle coastwise traffic, the government has found that from the standpoint of economy, as well as the superior quality of the coal which can be obtained, that it is in every way logical for the naval colliers to load at Baltimore.

Some idea of what it will mean to the coal trade to have the capacity of the Curtis Bay terminal doubled may be gained by considering the present facilities. Last year more than 3,000,000 tons of coal were dumped over the Curtis Bay pier, and the world's record for loading a vessel was established on Nov. 18, 1912, when the collier Newton was loaded with 7,473 tons of coal in 3 hours and 45 minutes.

The present pier is 800 ft. long, with 25 pockets on each side, and accommodates two vessels on each side. The yard where the shipments are assembled for loading will accommodate 3,500 cars, which eliminates the possibility of delay to the vessels by reason of waiting for cargo.

The Gulf Refining Co., of New York, has contracted with the New York Ship Building Co., Camden, N. J., for the construction of two oil tank steamers, 383 ft. long, 51 ft. beam and 30 ft. deep. These vessels will be duplicates of the Guilfoil and will be built on the Isherwood system.

Generated on 2024-07-27 01:45 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

The Remodeled Carolina

The steamer Carolina, of the New York & Porto Rico Steamship Line, arrived in the port of New York from Newport News, Va., on the afternoon of March 2, in many respects a new ship, having been reconstructed by the Newport News Ship Building & Dry Dock Co. during the past nine and a half months from plans and specifications prepared by Theodore E. Ferris, naval architect and marine engineer of New York City, in collaboration with Franklin D. Mooney, vice president and general manager, New York & Porto Rico Steamship Co., the reconstruction work having been carried on under the supervision of Mr. Ferris.

It will be recalled that the Carolina was originally the Grand Duchess, built for the Plant Line as a twin screw freight and passenger ship; later owned by the Savannah Line and named City of Savannah. Following this she became the property of the New York & Porto Rico Steamship Co. and was named the Carolina.

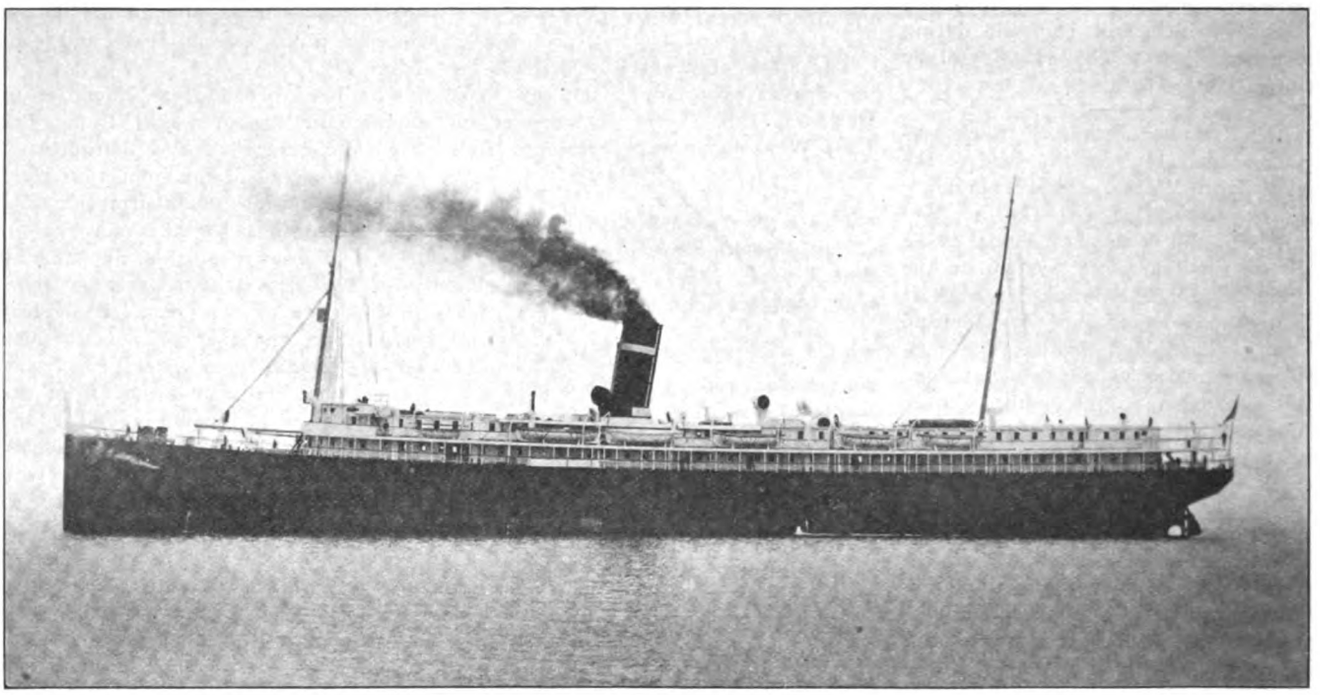
Previous to her reconstruction, she was operated on the Porto Rico Line for a number of years, not being wholly successful, however, many repairs having been necessary on each and every voyage of the ship to keep the vessel operating, the boilers being deficient and used up. The propulsive efficiency of the vessel had always been deficient and inadequate because of an abnormal bossing out condition about the stern in the original construction of the ship for the twin screw arrangement. The time having come because of re-boilering the ship, renewing tank top in boiler space and other miscellaneous work necessary, it was decided after several conferences of the board of directors, headed by Mr. Mooney, at the recommendation of Mr. Ferris, to rebuild the ship, not only to make her efficient in regard to speed and economical amount of horsepower, but in return increase her running powers as regards increased dead weight cargo capacity and cubic capacity, reduction in crew and increased passenger accommodations.

Alterations Determined Upon

After a thorough survey of the hull of the ship was made, the result being that the condition of the hull was found to be excellent, there having been practically no deterioration, plans and specifications were prepared and contract was placed with the Newport News Ship Building & Dry Dock Co. for reconstruction of the ship, changing her from twin screw to single screw, installing new boilers, new engines and auxiliaries, the work of representing probably the most intricate and largest rebuilding proposition on any ship done in this country, reflecting great credit on the part of the owners in undertaking such a proposition, which has resulted in now making this vessel a complete commercial success.

The Carolina before being altered to single screw ship had about 7,000 collective I. H. P. twin screw quadruple expansion engines, two 16-ft. diameter double-ended boilers and two 16-ft. diameter single-ended boilers, fitted with forced draft. Her speed on the Porto Rico route was nominally 13½ knots; vibration, steering and handling qualities of the ship not good.

The altered single screw arrangement consists of one triple-expansion engine and cylinders, 31 in. x 50 in. x 84 in., and a common stroke of 54 in., four single-ended boilers, 16 ft. in diameter, with I. H. P. of 4,000, which will give her a speed of 14½ knots on the Porto Rico route. On her sea trial on the trip from Newport News to New York, with 1,100 tons of water ballast and coal, the ship developed on a four-hour run a speed of 16¼ knots; there was little or no vibration; the ship steered and handled perfectly and showed abnormal sea qualities in the snowstorm and gale off the Atlantic coast on the night of March 1, which storm delayed a number of incoming trans-Atlantic vessels.

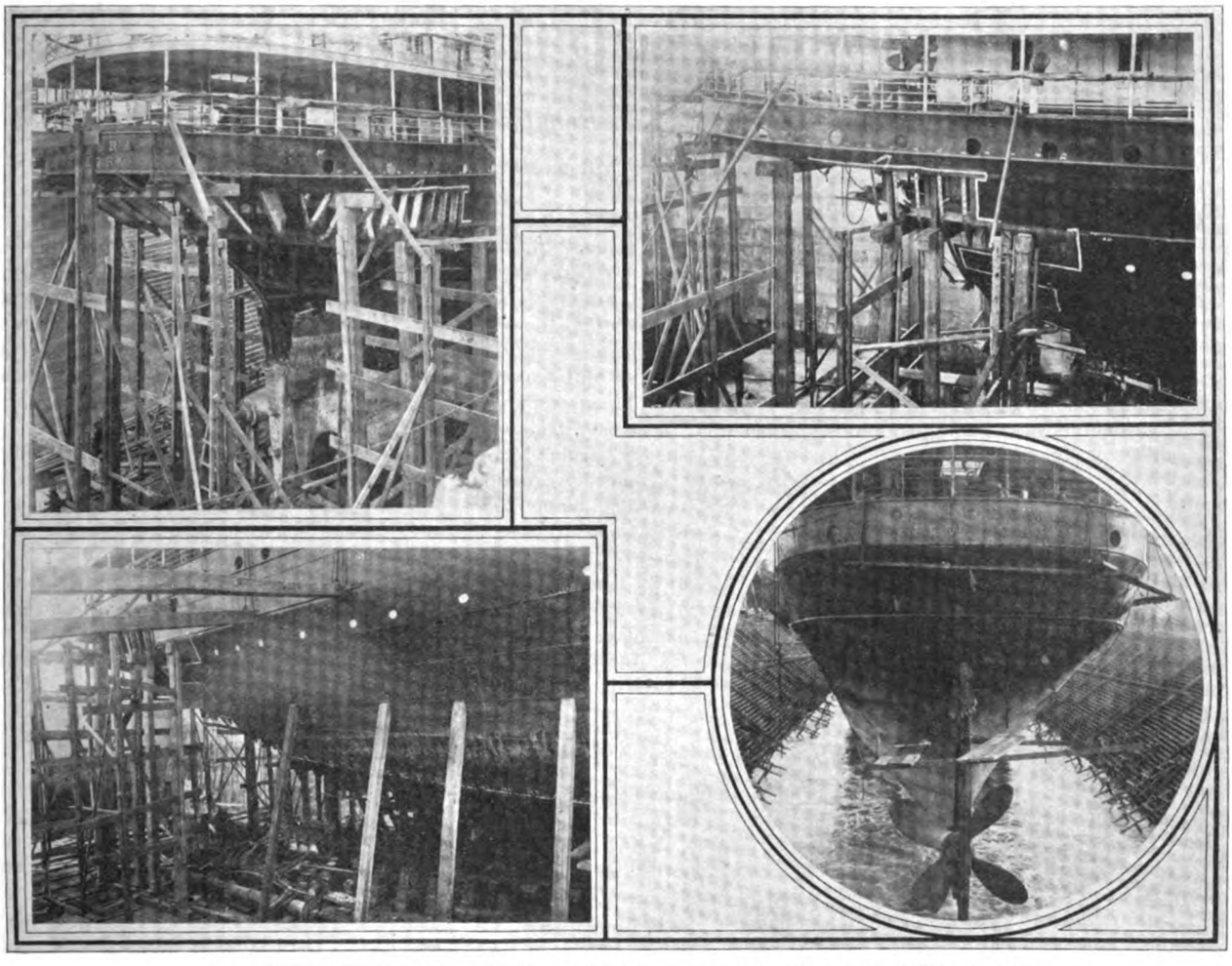


THE RECONSTRUCTED CAROLINA

Reconstructing the Vessel

In the process of reconstructing this ship there has been gained, including actual weight of ship due to reduction in weight of propelling machinery, reduction in bunkers and boiler feed water, about 1,000 tons in dead weight, 35 per cent in cargo cubic capacity and quite an increase in passenger accommodations, number of staterooms, suite rooms, private baths, etc., reduction in engine department crew and a vast reduction in coal consumption, all principally because of the ship's original abnormal condition at the

Generated on 2024-07-27 01:45 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



RECONSTRUCTING THE STEAMER CAROLINA AT THE NEWPORT NEWS YARD

stern about the propeller wheels. This being eliminated and due to change to single screw, makes her propulsive efficiency high and the necessary horsepower to obtain the desired speed vastly less than was originally required for the ship.

The Carolina is of the following dimensions:

	Ft.	In.
Length over all	405	0
Length between perpendiculars	379	0
Depth to hurricane deck	36	7
Beam, molded	47	8
Total dead weight at maximum load draught, including cargo, coal, water and stores, tons	5,100	
Cargo cubic capacity, cu. ft.	260,000	
First class passengers	190	
Second class passengers	50	
Crew, about	100	

There are a number of suite rooms and private baths, public spaces about the ship, such as smoking room, social hall, observatory, deck shelter, ladies' parlor, etc., which are elaborately finished. The dining saloon is a spacious and luxurious room, with the modern arrangement of individual seating tables. The catering will be of the popular hotel service. Additional shade decks and awnings have been fitted. The ship is equipped with boats with capacity for every person on board.

The Carolina has complete new propelling machinery of the very best, a thoroughly staunch hull with complete double bottom, numerous water-tight bulkheads and other safety devices, all combine to guarantee the Carolina a high position among steam craft. The ship is commanded by Capt. J. O. Foss, commodore of the Porto Rico Line. Stewart Holmes, who for several months has been at Newport News with the ship, acting as inspecting engineer, will be chief engineer of the Carolina.

Ivor Knudsen, general manager of the shipbuilding firm of Baumeister & Wain, Copenhagen, Denmark, who is now in this country, has sold the patent rights of the Diesel engine, as manufactured by his firm, for the territory west of the Mississippi to the Union Tool Co., of Los Angeles. The company will for the present manufacture only the stationary type.

Because oil ranges are much cheaper and cleanlier than coal ranges, the navy department is having them installed in the galleys of the Pennsylvania and Battleship No. 39, now under construction, for cooking purposes. The department announced today that it had decided on the oil range after it had experimented with various other types. This step is in line with the department's policy of using oil instead of coal for fuel on its latest ships. The cost of cooking by the different methods was found to be about as follows per day: With an electric range, $22.50; with a coal range, $16, and with an oil range, $5.65.

A novel use has been found for one of the big locks of the Panama canal at Gatun, which has temporarily been converted into a regular drydock for the overhauling of five of the naval submarines, C-1 to C-5, which have been stationed at the Atlantic entrance of the canal since Dec. 12 last. As the lock chambers are arranged in pairs it is possible thus to use one of them as a drydock without interfering with the passage of vessels through the other.

The steamer Australia, of the Corrigan fleet, is at the Cleveland yard of the American Ship Building Co., having her wooden deck houses replaced with steel ones.

Generated on 2024-07-27 01:45 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Busy in Repair Work

The Manitowoc Ship Building and Dry Dock Co. Has Put in a Busy Winter

THE Manitowoc Ship Building & Dry Dock Co., Manitowoc, Wis., has put in an uncommonly busy winter in repair work.

The equipment of the Manitowoc yards is diversified to undertake a wide range of work. It has a completely equipped machine shop, a boiler shop, carpenter shop, building for laying out plans for complete vessels and for making templates by which steel plates are cut and punched, an electric shop, and, in fact, practically the entire range of equipment which might be called for in building or repairing anything from a pleasure boat to a lake freighter.

Four new steel craft are on the ways, to be launched early in the spring. A new steel tug, 87 ft. long, is being constructed for the Erie Land & Improvement Co., Chicago, a subsidiary of the Erie railroad, to be used in the Chicago river for towing car floats.

Another new steel tug is the M. G. Hausler, 80 ft. long, for the Lincoln Park Commissioners, Chicago, which is to replace the wooden tug of the same name. The machinery of the old craft is being installed in the new and a new firebox boiler will furnish steam.

Two steel dredges are being constructed on a sub-contract from the Bucyrus Co., South Milwaukee, Wis., one a 20-inch hydraulic dredge and the other a dipper dredge, the hulls being of steel. The Bucyrus Co. will furnish the machinery.

Four vessels of the Interlake Steamship Co. are in the yards for more or less extensive repair work. The Indus, nee Lake Shore, is being modernized by arch reconstruction. At the same time the hatches are being widened from 8 to 12 ft., new steel hatch covers will be placed and modern steam handling equipment will be installed to operate the hatch covers.

Alterations to the Arcturus

On the Arcturus, nee J. B. Wood, hatches are being widened from 9 to 12 ft., steel hatch covers and modern steam handling equipment being installed.

The Venus and Neptune, of the same fleet, are docked at these yards for minor repairs. The steamer Livingston (small) owned by the Michigan Navigation Co., is being given a steel deck to replace the wooden deck and general repairs are being made to the hull and equipment.

The Topeka, of the Lake Shore Stone Co., Milwaukee, is in the small dry dock for general hull repairs, much of the planking being removed and replaced and a great deal of work being done on the decks and upper works, while general overhauling of the equipment is also being done.

The Pontiac, owned by the Cleveland-Cliffs Iron Co., is having her boilers placed on the tank top and so located as to give room for an extra hatch in place of the scuttle hatch formerly located aft of the boilers. The Pontiac was re-arched last year.

General Overhauling

The Chickamauga, owned by the Jackson Transit Co., Cleveland, and John Owens, owned by J. Emery Owen Transportation Co., Detroit, are being given a general overhauling.

The S. P. Kirby, owned by the Northwestern Transportation Co., Detroit, is being given general repairs and the America and Brazil of the North American Steamship Co., Cleveland, are at the yards for minor repairs.

The fleet already mentioned is added to by the near presence of the Goodrich Transportation Co.'s yards, which are just across the river from the ship building yards. There are moored in winter quarters, the whaleback Christopher Columbus, the Virginia, Iowa and Sheboygan, of the Goodrich line, and a short distance away the Minnesota, of the Crosby line. The latter steamship was practically reconstructed a few years ago at the Manitowoc yards at a cost of about $150,000.

Believing that pleasant office surroundings are a factor in efficiency, the company recently has built a new office building in its yards. The Manitowoc Boiler Works Co. is a subsidiary of the ship building company and formerly two offices were maintained about half a mile apart. Efficiency dictated consolidation of the offices and the old boiler shop office, a two-story brick building, was raised, placed on a section of the floating drydock and moved half a mile to the center of the ship yards. A photograph showing the building in transit was presented in THE MARINE REVIEW, October, 1913. This structure formed a nucleus of the present office building. The ground about the structure is an alluvial muck, but the building stands on a foundation which would bear it should the soil surrounding it be entirely washed away. Piles were driven 30 ft. deep to a solid stratum and concrete laid on them, giving a foundation independent of the surrounding soil.

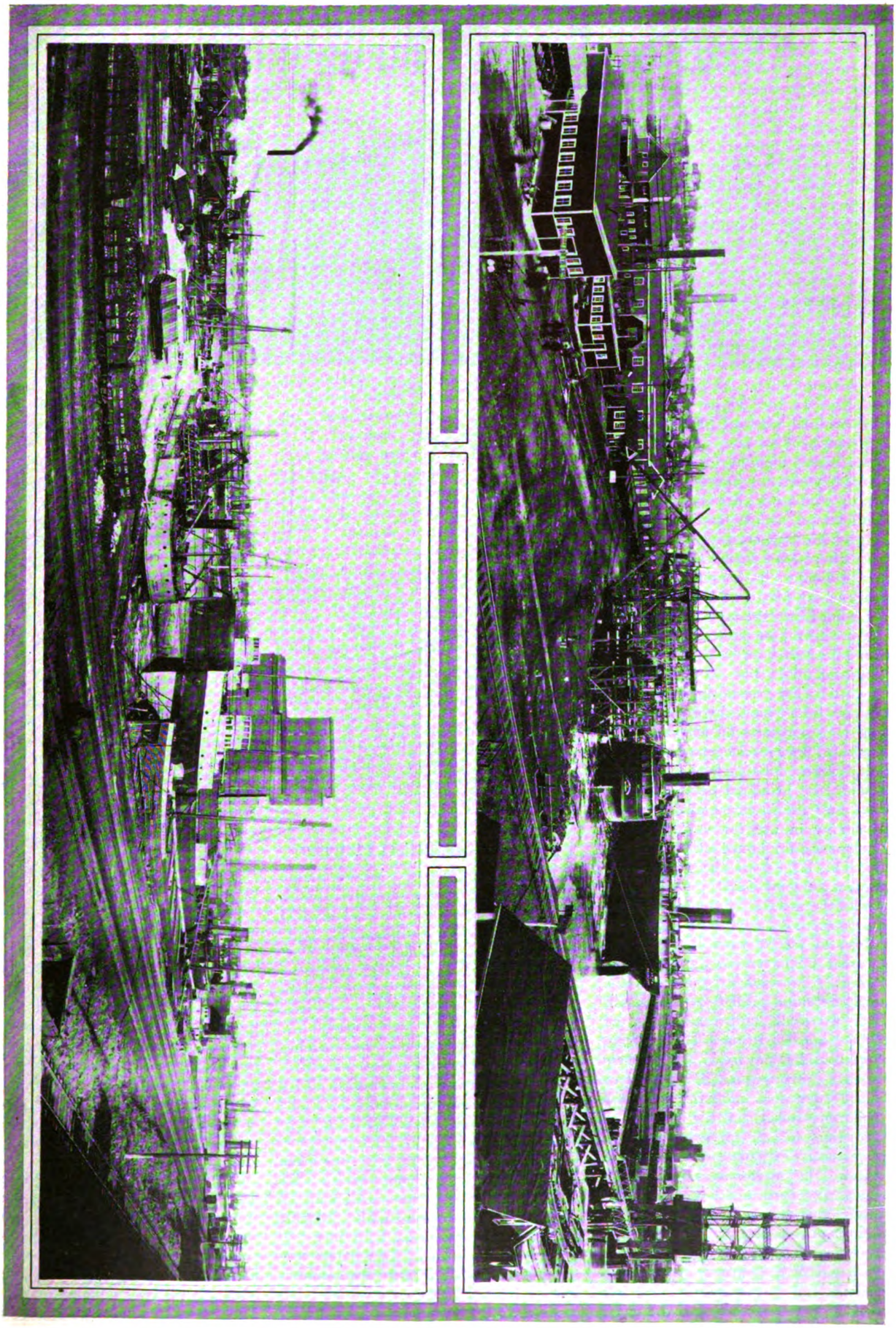
The structure is 50 x 70 ft., two stories, of brick veneer and handsomely trimmed in oak, the walls being tinted neutral colors which are easy on the eye. A basement, 11x18 ft., is the only portion of the building below the first floor and is used for housing the boiler which supplies heat to the offices. The vault is directly over this basement, two stories high, outside the rectangle of the building proper. It is used for storage of books, records, drawings and other valuable papers and is fireproof.

New Office Building

Entering the lower floor, the visitor is in the entrance hall, which leads half way towards the rear. On the left is the office of Elias Gunnell, president of the company, and on the right is the stair to the second floor. Just past the stair is the entrance to the office of L. E. Geer, secretary. At the rear of the hall on the left is the information room containing the telephone switchboard, which is separated by glass partitions from the stenographers' room. Wash rooms are provided off the stenographers' room. The directors' rooms are on the right and the office of the purchasing agent just behind these. The rear half of this floor is one large room for the accounting department and in one corner a small room is partitioned off having two doors leading from the outside and windows opening from the accounting room. This room is used by men from the ship yards coming to the office to see the timekeepers and also is used on pay day, the men filing in one door, past the window and out the other, thus obviating their presence in the accounting room proper.

On the second floor are the offices

Generated on 2024-07-27 01:46 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



THE MANITOWOC SHIP BUILDING & DRY DOCK CO.'S YARD AND THE VESSELS AWAITING REPAIRS

Generated on 2024-07-27 01:46 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

of A. P. Rankin, chief engineer, J. E. Thiell, advertising manager, and C. C. West, general manager. The rear half of this floor is given over to the drafting room, except for individual offices opening from it for the engineer of the boiler department and the engineer of the hull department. Modern lavatory facilities are also provided from this room.

The lighting is entirely on the indirect principle and special provision is made for ample illumination on dark days and through the winter.

Repairs on Naval Vessels

No request is being made of congress this year by the navy department for authority to repair and overhaul naval vessels where the cost of the works exceeds the 20 per cent limit of the original cost of the vessel as now prescribed by law. Usually this class of work amounts to something like $6,000,000 in the course of a year. Much of the work has been due to alterations on ships, instead of repairs, and the experts say that if there are no alterations made there should be no difficulty in keeping the cost within the 20 per cent limitation.

For some time the navy department has been seeking to have repealed certain requirements of law adopted as long ago as 1861, that make necessary the resort to the formality of a board of officers and a report therefrom before making certain repairs on ships. At the time these laws were enacted naval vessels were constructed of wood, sails were the principal means of propulsion, and the intricate electrical apparatus now in use for various auxiliary purposes on board ships did not exist. The largest of the vessels had a displacement of 5,200 tons, and as a whole they were simple and inexpensive structures, compared with modern ships of war of intricate construction, great displacement and powerful armament. In comparison with the cost of the ships of 1861 and expenditure of $3,000 to hulls and spars, or $1,000 for repairs to sails and rigging, was a considerable item, while these sums are inconsequential compared with the cost of a modern battleship or armored cruiser and its rigging.

According to the present practice, when extensive repairs are under consideration, the matter is submitted to the general board of survey and the commander-in-chief of the fleet or the commandant of the navy yard, their recommendations are forwarded to the navy department bureaus concerned, and finally all questions involved are passed on by the secretary of the navy. In many cases it is highly inexpedient to select inspection boards as an initial step in going through all this formality and the navy department believes that the present requirements should be repealed, so that more expeditious methods may be adopted.

Put in a Busy Winter

The Great Lakes Engineering Works, Detroit, has been very busy both at its Ecorse and Ashtabula plants. Among the more important work that it is doing at the Ecorse plant is the reconstruction of the bulk freighter Colonel on the arch girder system with the consequent removal of hold beams and stanchions. Her hatches are also being increased in size and fitted with steel covers. The steamer E. M. Peck is being shortened 6 ft. and the hull reconstructed on account of explosion damage. The Bethlehem and Seneca are getting new boilers and air heaters. The passenger steamer North American is undergoing a number of alterations to cabins and repairs to bottom damage. Other vessels undergoing general repairs at Ecorse are the Rhoda Emily Acadian, William J. Filbert, Thomas Lynch, P. A. B. Widener and Harvester. The vessels at the Ashtabula plant are the Presque Isle, which is having new coal bunkers, the Empire City, new tank top, Superior City, bilge ceiling repairs, and the Edenborn, Peter White, Mullen and Hoover & Mason, general repairs. The Erie and American are having single rudders taken out and replaced with double rudders.

The New Curruthers Hatches

The St. Lawrence & Chicago Steam Navigation Co.'s new steamer, building at the yard of the Collingwood Ship Building Co., Collingwood, Ont., to replace the steamer James Curruthers, lost in the November storm, will be one of the staunchest bulk freighters on the lakes. Great care is being exercised in making the hatches absolutely secure. The hatches will be spaced 24 ft. centers instead of 12 ft. centers, with openings 10 ft. 6 in. in a fore and aft direction. Four-in. spruce hatch covers will be substituted in place of the telescopic steel covers. These covers will be fitted (salt water style) inside of Tyzacks patent hatch rest bar and will be supported underneath with portable steel strongbacks, fitted both fore and aft and athwartships. The hatch covers will be fastened with Mulholland's patent hatch fastener, which has proved its enormous gripping power on numerous occasions.

Activities of Cox & Stevens

The tow boats Mary F. Scully, Thomas J. Scully, John Scully and Coastwise, belonging to the Scully Transportation Co., all being ocean-going vessels, have been chartered by Cox & Stevens to the regatta committee of the New York Yacht Club for use in connection with the races for the America's cup.

The 100-ft. passenger propeller Patchogue, which was designed by Cox & Stevens, has been sold by them for the Patchogue & Water Island Navigation Co. to the Boston, Nahant & Pines Steamboat Co., of Boston. This vessel will leave Patchogue about May 1 for her new home port.

The contract for completing the tug Maycliff, designed by Cox & Stevens for the Undercliff Terminal & Warehouse Co., construction of which vessel was commenced at the yard of J. H. Dialogue & Son, of Camden, N. J., has been awarded to the Staten Island Shipbuilding Co. This vessel has just arrived at Staten Island and is being rapidly pushed to completion. Maycliff will be one of the largest and most powerful harbor tugs. Her dimensions are: Length, 110 ft.; breadth, 26 ft. 6 in.; depth 13 ft. 6 in., her engines being 19 in. and 42 in. by 30 in. and being fitted with Scotch boiler, 16 ft. by 11 ft.

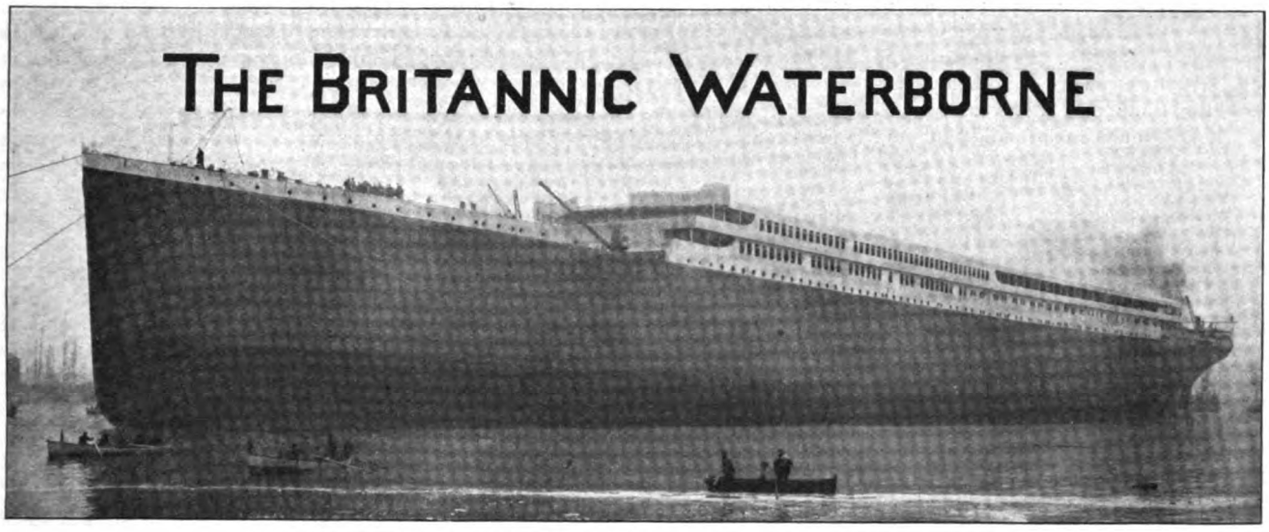
The same firm have turned over for Manuel Idera for export, a twin screw passenger boat from their designs, 72 x 13 x 3 ft. 6 in., fitted with two 100-h. p. Craig motors arranged to operate either with gasoline or alcohol. This vessel has unusual speed, namely, 15 miles, and gave very satisfactory results on trial.

Extremely high waves recently broke heavy plate glass in the lantern —which is 130 ft. above high tide level—of the Tillamook Rock light station, off the coast of Oregon, according to an official report from the lighthouse keeper, who recorded the highest waves that had occurred in the 12 years of his service there. The gale had raged for more than 14 hours and a maximum wind velocity of 84 miles per hour was indicated.

The steamers of the White Star Line, Detroit, are undergoing the usual spring fit-out. The steamer Tashmoo has received a new Byerlyte flooring covering her entire main deck. This flooring, which has an asphalt base, is becoming very popular on the lakes. The main saloon of the City of Toledo will receive a new carpet.

Generated on 2024-07-27 01:46 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

THE BRITANNIC WATERBORNE



AS THE BRITANNIC LOOKED IMMEDIATELY AFTER HER LAUNCHING

IN THE March issue the launching of the White Star liner Britannic was chronicled, the largest vessel so far constructed in the British Isles. Additional particulars are now obtainable through the courtesy of the *Ship Builder*, New-Castel-on-Tyne. The leading particulars of the vessel are as follows:

Length over all, about	900 ft. 0 in.
Breadth extreme, about	94 ft. 0 in.
Depth, molded	64 ft. 3 in.
Gross tonnage, about	50,000
Load draught	34 ft. 7 in.
Displacement at load draught over, tons	53,000
I. H. P. of reciprocating engine	32,000
S. H. P. of turbine	18,000
Passenger accommodation for over	2,500
Crew accommodation	950

Each successive Atlantic liner launched at the Belfast works of Messrs. Harland & Wolff has marked a distinct step, not only in size, but in strength and in those provisions necessary to insure comfort to the passengers and the greatest degree of safety consistent with the elemental and other forces of nature. Indeed, it may be said that each vessel has typified in turn the highest achievement of her day in the practice of ship building and marine engineering. The Britannic, the latest of the ships, is in every respect an example of this periodic standard of progress; but as she is only of slightly greater tonnage than the Olympic, being about the same length but rather more beam, it would seem that the owners—than whom no one has a better conception of the requirements of the Atlantic passenger trade—have come to the conclusion that for the present the traveling public are completely satisfied with the Olympic type of ship. Nor is any attempt to be made to increase the speed; the schedule time will be maintained with precision by propelling machinery sufficiently powerful to enable the average service speed of 21 knots to be maintained on any voyage, irrespective of the most adverse weather which may be met with either for a part or for the whole of the time the vessel is on the Atlantic. This latter condition has been aimed at and fulfilled in all the White Star ships.

Advance in Size

Hitherto the advance in size has been considerable in the case of each of the successive large ships destined for the Atlantic service of the White Star Line. Thus, in the Oceanic, completed in 1899, the length was 685 ft. and the displacement 31,600 tons at 35 ft. 7 in. draught. The Cedric, built in 1903, had a length slightly less; but owing to her greater beam, an increased displacement—37,900 tons at a draught of 36 ft. 8 in. The Baltic, of the following year, had a length of 708 ft. and a displacement of 40,700 tons at a draught of 37 ft. 3 in. The Adriatic, completed in 1906, was the next notable ship, and in her case the length was over 725 ft. and the displacement 40,800 tons. The Olympic, completed in 1911, marked a still further increase in length, to 882 ft. 9 in., with a displacement of 50,000 tons at 34 ft. 6 in. draught. Now comes the Britannic, with slightly increased beam, the result being that the displacement is over 53,000 tons at 34 ft. 7 in. draught. These successive increases in size, it will be seen, have been confined within reasonable limits, and the aim underlying the design has been at all times not only to insure a dividend-earning ship, but to make certain that the vessels would stand up to the greatest of Atlantic gales, and in other respects would conduce to the comfort of passengers on board.

Messrs. Harland & Wolff have probably had greater experience than any single ship building firm in the design of the structural details of modern Atlantic liners, and the Britannic embodies every lesson of accumulative experience. Her double bottom, which is over 5 ft. deep increased to over 6 ft. through the machinery space, has on each side of the center line six longitudinal girders, which, with transverse plating, divide the double bottom into a very large number of cellular spaces. This double system of construction is carried up the sides for the greater portion of the ship's length to a considerable distance above the load water line, and here again the space between the two skins is divided, not only by vertical partition walls, but by heavy steel horizontal watertight plating; so that in the double skin, as well as in the double bottom, there is a great number of small compartments. The advantage of this system of construction as compared with the introduction of side coal bunkers—which to some extent serve the same end by providing a double skin—is that there is never during the voyage an open door in the inner wall of the double sides, as with coal bunkers.

The framing of the ship throughout is exceptionally heavy, and extends to the shelter deck, a height of 66 ft. Moreover, hydraulic riveting has been introduced to a larger extent than formerly, and where extra stress is likely to be set up there is quadruple riveting. This applies particularly to the top shell plating, which, as in all ships, is subjected to the greatest stress when the vessel is borne forward and aft on the crest of waves or when she is carried only amidships, the bow and stern being over the wave troughs. Again, there extends right fore and aft, at the level of every deck, four lines of heavy girders; and at frequent intervals, extending from the bottom of the ship right to the shelter

Generated on 2024-07-27 01:46 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

deck, stanchions and heavy columns are fitted, thus insuring great longitudinal and vertical stiffening of the whole structure. The deck beams assist to the same end transversely, and have been made especially strong. Even where there are openings for the boilers and machinery an equally great degree of structural strength is imparted by the use of girders in the longitudinal and transverse lines, supported again on heavy columns.

There are 16 transverse bulkheads, five of which extend to a height of over 40 ft. above the deepest loadline, while all the others are carried to a height of over 21 ft. above the water line. The bulkheads are of very heavy construction, the aim being not to economize weight, but rather to insure the maximum of strength by a careful distribution of it where it is most required. The stern framing and the brackets for carrying the three propellers are of very massive construction, a fact which is established by the total weight of the forgings and castings, viz., over 300 tons. The rudder, too, weighs over 102 tons, and is operated by Messrs. Harland & Wolff's steering gear, which has a toothed quadrant, operated to port or starboard by means of two powerful three-cylinder engines, as large almost as those for the propulsion of a fair-sized cargo boat. The engines are in duplicate, so that there is no possibility of the breakdown of one preventing the steering of the ship. Provision is also made for taking up any shock due to a green sea striking the stern of the ship, as this might otherwise affect the steering machinery.

Nine Decks in the Ship

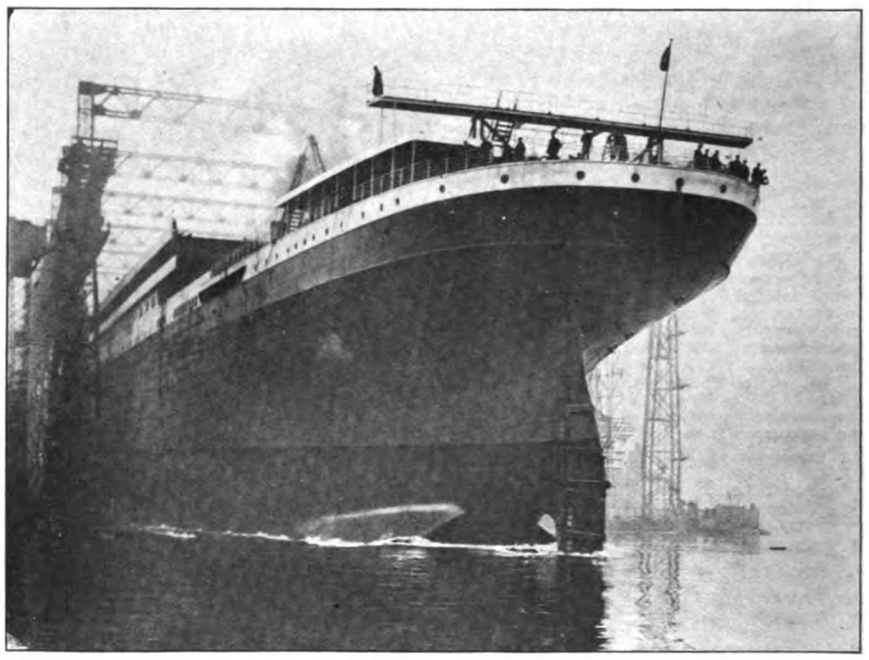
There are nine decks in the ship, on six of which accommodation is provided for over 2,500 passengers, including 790 in the first class and 830 in the second class. A feature of the accommodation is that a large number of the first class staterooms are single-berth rooms. In practically every case, whether a single or a double-berth room, there is in connection with each a bathroom and closet or a shower bath and closet. A large number of special suite rooms are arranged on the bridge and shelter decks. In addition, there are two special suites, these including a sitting room, two bedrooms, servants' rooms, bath rooms, etc. Connected with the suite on the starboard side of the vessel there is an isolated verandah about 25 feet long, while that on the port side has an isolaated deck promenade about 50 feet long. Extending through the first class passenger decks there are two large companionways. In that forward there are three electric elevators extending right up to the boat deck, while further aft, but independent of the companionways, is another first class elevator.

As regards the public rooms there are on the bridge deck a large gymnasium and a children's playroom. On the promenade deck, the next level, a feature of the vessel is that the plating is carried up the side and has large windows to enable either a winter garden to be arranged or to provide for passengers a sheltered promenade with a complete view of the sea. The public rooms on this level include a reading and writing room and a first class lounge, as well as a first class smoking room with verandah cafe and palm court. On the bridge deck aft there is the a la carte restaurant (the full width of the ship), with pantry, etc. The next level, the shelter deck, is, so far as first class passengers are concerned, taken up entirely with staterooms, while on the deck below is the dining saloon and the reception room in connection with it, the two together occupying nearly 200 ft. of the length of the ship. On a still lower deck there are Turkish and electric baths, racquet court and a swimming bath.

The second class accommodation is little inferior to that of first class, and is equally adequate. It is arranged mediately abaft the first class quarters, with a companionway and electric elevator extending right up to the boat deck. The dining saloon is on the saloon deck, and the library and reading room and the second class gymnasium on the shelter deck, where also there is an extensive promenade. A smoking room and large space for promenade are also provided on the bridge deck. The third class public rooms are in the stern of the ship, except the dining saloons, which occupy the space of two watertight compartments on the middle deck amidships. The length of these two rooms combined is 100 ft., and they extend the full width of the ship. The companionways for the third class passengers are greatly increased in number as compared with the practice in the past.

Many new features have been introduced in connection with sanitation. Probably for the first time in a seagoing vessel an effort has been made to depart from the methods which have been handed down from the beginning of ship building. Instead of an enormous number of soil discharge pipes from lavatories, etc., on each side of the ship, the arrangement adopted simulates, in each compartment, the conditions applicable to the best town-planning system, with the assistance of electric pumps. The hot water system also has had special consideration, and is such that immediately a tap is turned on hot water is obtainable, instead of a large quantity of cold water preceding the flow of warm water. Thus there is great saving in the fresh water supply, an important desideratum on board ship where any shortage must be made up by distilling.

In respect of ventilation, too, experience has been very carefully col-



LAUNCHING THE BRITANNIC

Generated on 2024-07-27 01:46 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

lated so as to arrive at the highest efficiency. The dominant idea is to extract the foul air from the interior and to pass fresh air—which may be heated in the winter time—through trunks along the side of the ship on each deck, having louvres at various points; there are as many as 1,500 such louvres in the vessel. In addition, every first class room has an electric fan, while the public rooms are also ventilated and heated by electric fans. In the principal entrances there are large electric radiators having a capacity of from 3,500 to 6,000 watts.

Extensive Use of Electricity

Electricity, indeed, is very extensively utilized throughout the ship, the power station being as great as that in many provincial towns. The total generating power in the ship is equal to 1,660 kw., and perhaps a clearer idea of this capacity is afforded by the fact that the current, if used entirely for lighting, would be capable of running over 150,000 lamps of 10 candle power. A large proportion of the electricity generated is utilized for power purposes. There are electric ventilating fans, elevators for passengers, mails, baggage, etc., electric radiators, electric cranes for manipulating the cargo, and two electric whistle controls; while electricity is also employed for the telephone system throughout the ship, for the loud-speaking telephones between the bridge and the various working departments of the ship, for electric baths, and even for the machines for clothes pressing and for heating the tongs in the staterooms and in the ladies' hair-dressing department, the last mentioned a new feature in Atlantic ships.

For the Marconi wireless installation, the wires, as usual, are carried on the masts, which rise to a height of over 200 feet above the load-line. The power of the installation is sufficient to transmit messages over 2,000 miles, so that the vessel throughout the voyage will always be in communication with either Britain or America, and for a considerable time in mid-ocean with both countries.

As in some preceding ships built by Messrs. Harland & Wolff, an emergency electric power station is situated on one of the decks far above the water line. In this there is not only a very extensive series of electric storage batteries, but two powerful electric generating machines, which can be used not only for charging the accumulators when current is being taken from them, but for running direct what is termed the emergency circuit, including the Marconi apparatus, the electric whistle controls, the electric motors working the boat-hoisting gear, light for the more important parts of the ship, etc., so that when the main power station is out of use the necessary electrical work can be continued. This set, too, will suffice for providing current for all electric operations and lighting necessary when the vessel is in port.

An interesting feature in the ship is the complete control which the captain exercises from the navigating bridge, which is 63 ft. above the water line and 100 ft. above the keel.

From there orders can be given by telephone or telegraph to every working quarter of the ship, and instruments are provided to demonstrate that most of the important orders have been carried out. Thus, there is an indicator to show the working of the main engines, the operation of the steering machinery, and the actual position of the bulkhead doors, the arrangement in this case being such that progress in opening or closing the door is automatically shown. Pneumatic tubes are provided for the receipt and despatch of messages to the Marconi room. The angle of the rudder is electrically recorded and the depth of the ocean is sounded by electric machinery, while electric submarine bells indicate the proximity of lightships, etc. The lookout men have telephonic communication with the bridge, and the steering is done through telemotor gearing direct. Telegraphs also indicate the necessary instruction to the men in charge of the anchors and capstans. There are five anchors, the largest being 16 tons, and powerful steam windlasses and warping gear are provided.

Forty-Eight Lifeboats

Forty-eight of the largest size of lifeboats yet made are being fitted, and two of these have powerful propelling machinery. These boats, instead of extending right along the boat deck, are arranged in four separate groups, with abundant room for marshaling passengers, etc. The system of davits used differs from that adopted in any other preceding ship. There are two davits on each side of the deck, where the boats are placed. These do not slew, the space apart being sufficient to pass the boats through. They are of lattice-girder construction with a swan-necked top turned towards each other in each pair. From the illustrations it will be seen that these davits more resemble shear legs in their action than ordinary davits or cranes, being pivoted at their base and moving from the vertical position to a considerable angle inboard or to a considerable angle outboard. Indeed the angle is so great that the davits command one-half of the deck of the ship, while when outboard they will enable the boats to be lowered vertically into the sea, even if the vessel has considerably heeled over. The arrangement is such, too, that the boats may be traversed across the deck, so that all the boats may be lowered on the one side of the ship at the will of the captain. The davits are inclined inboard or outboard by means of powerful screw gear. From the stem of each davit there extends inboard a built-up stay, the inner end of which is secured to a nut mounted on a worm shaft on the deck. By electric motor the two worms for each pair of davits is rotated, and as the worm screw rotates the nut travels along it, and, acting through the stay, pushes the two davits from the vertical to a considerable angle outboard. The reverse travel of the two nuts on the worm pulls the davit from the vertical to a considerable angle inboard, in order to lift the boats from their chocks on the decks. The height and outreach of the davit enables the boats to be mounted one over the other in tiers, and also facilitates the placing of several tiers in the width of the ship. Moreover, the davits can be kept so far inboard as to give a wide passage at either side for promenading and for marshaling the passengers in case of emergency. Limit switches are provided, so that in the event of any accident to, or temporary aberration on the part of, the man manipulating the gear, the motion of the davits or boats will be arrested before any damage can take place, thus making the gear practically mistake proof. Powerful electric lamps are provided at the top of each davit, which not only assist in illuminating the surrounding space, but greatly facilitate the operation of the gear at night. Another important feature in the invention is the arrangement by which boats can be lowered on an even keel, even in the event of the ship being down by the head or the stern. The two falls are wound on separate drums mounted on the same shaft, and normally rotate together when a boat is being raised or lowered but means are provided for rotating the drums separately, thus winding up or paying out one fall independently of the other. A further advantage of the Harland & Wolff davit is the fact that the boats can be all open lifeboats of good type, thus dispensing with the collapsible type of boat.

Turning now to the vessel's main propelling machinery, the three screw propellers are operated by combination machinery, consisting of two sets

Generated on 2024-07-27 01:46 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

of four-cylinder triple-expansion reciprocating engines operating the wing shafts, and a low-pressure turbine of the Parsons type driving the center shaft. The steam, after passing through the successive cylinders of the reciprocating engines, flows normally into the turbine; and although the pressure at entrance is only about 10 lb. absolute as compared with about 200 lb. at the reciprocating engines, the exhaust turbines enables the whole of the energy in the exhaust steam to be utilized before it passes to the condenser. Thus the turbine, notwithstanding the low initial steam pressure, develops about 18,000 H. P. which is slightly more than the power developed by each of the two reciprocating engines. The result is very much higher economy than is possible with reciprocating engines only. Messrs. Harland & Wolff, as is well known, have made a specialty of the combination type of machinery; indeed no firm has done more in the adoption of this system than the Belfast builders, who have completed, or have now in hand, combination machinery of a total horsepower of 450,000. The Britannic's machinery is expected to give a total horsepower of 50,000, the largest power so far developed by a combination set. The turbine, which has been made entirely at the Belfast works, is the largest marine exhaust turbine yet made, the weight complete being close upon 500 tons.

Turbine Exhaust

The turbine exhausts its steam into two condensers, but provision is made by means of a special valve so that the exhaust steam from the reciprocating engines may pass direct to the condenser instead of through the turbine to the condenser. This confers the advantage that no reversing or astern turbine is necessary on the center shaft. The astern driving of the ship, and therefore all maneuvering in port, is done by the reciprocating engines on the wing shafts. The "change over" from driving ahead with all three propellers to operating the wing shafts astern, as in the ordinary twin-screw ship with reciprocating engines, is effected almost instantaneously. In maneuvering, the ship corresponds exactly, so far as the manipulation of the machinery is concerned, to a twin-screw vessel.

The steam-generating equipment consists of 24 double-end and five single-ended boilers of the ordinary marine type and fitted with 159 furnaces. The boilers are distributed in six boiler rooms, separated by watertight bulkheads and by coal bunkers athwart the ship between the two inner skins and carried up to a level far above the load water line. Thus there are practically three division walls between each boiler room, with a very considerable intervening enclosed space. The waste gases, etc., from the furnaces are conveyed to four funnels, which rise to a height of about 180 ft. above the keel of the ship.

Needless to add, the system of auxiliary machinery throughout the ship is very complete, and elaborate arrangements have been made in connection with the pumping of the various compartments. It is possible independently to pump any compartment, and the valves in connection with the pumping can all be operated from one of the decks far above the water line.

Battleship Oklahoma Launched

The battleship Oklahoma was launched from the yard of the New York Ship Building Co., Camden, N. J., on March 23.

The Oklahoma and her type ship are distinguished by several unusual features. The most striking is the turret arrangement. The forward and after turrets are of the triple mount design, each carrying three 14-inch rifles. Each of the other two turrets carry two 14-in. rifles. Another distinguishing feature is the single funnel. This design was adopted by reason of the fact that the vessel is to burn oil exclusively.

The propelling machinery consists of two sets of triple-expansion engines and 12 Babcock & Wilcox water tube boilers, working at a pressure of 265 lbs. per sq. in. The engines at full speed will make about 125 revolutions per minute, and the indicated horsepower will be about 25,000 on trial.

Dimensions and Batteries

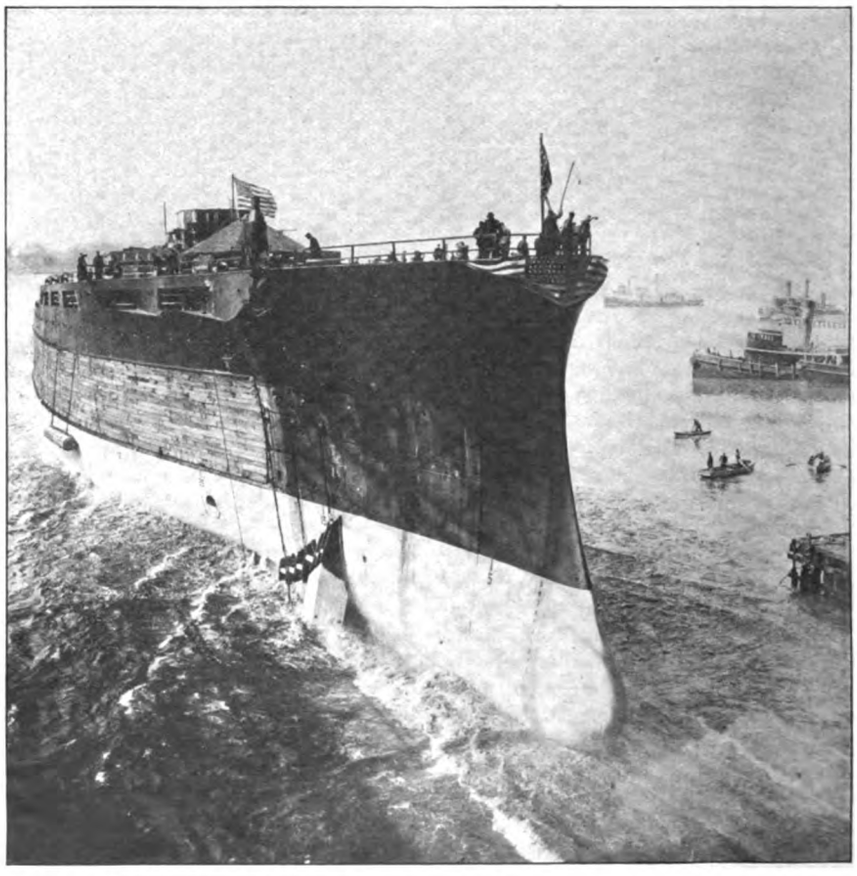
The vessel is of the following dimensions:

	ft.	in.
Length on load water line	575	0
Length over all	583	0
Beam, extreme	95	2½
Trial draught	28	6
Trial displacement	27,500	tons
Trial speed	20½	knots

The secondary battery consists of 21 5-in. rapid fire guns, for defense against torpedo attack. There are also fitted four submerged 21-in. torpedo tubes and 10 small guns for saluting and landing purposes.

The vitals of the vessel are protected by a deep belt of armor on the sides and by armored decks and bulkheads. Protection against submarine mines and torpedoes is afforded by means of close sub-division in the lower part of the vessel.

The vessel will be lighted by electricity and have several large and



LAUNCHING THE BATTLESHIP OKLAHOMA AT THE NEW YORK SHIP BUILDING CO.'S YARD

Generated on 2024-07-27 01:47 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

powerful searchlights. The ventilation and heating are by means of blowers and thermo tanks. A wireless telegraphic outfit is part of the equipment.

The complement of the vessel will consist of 55 officers and 800 men.

It was the lessons taught by the tests made upon the old battleship Texas that brought about the design of this class of dreadnoughts. It will be remembered that the name of the old Spanish war veteran was changed to San Marcos; that she was anchored over a shoal in Chesapeake bay and made a target of by the battleships of the Atlantic fleet. The effect of the shell fire upon her steel turrets and armored sides was carefully noted and the disposition of the armor on these newer vessels was the result.

Lessons Taught by Tests

The side armor, 13 in. in thickness, extends for a length of more than 400 ft. The bases of the outermost turrets are thus protected, as the armor extends beyond these for a considerable distance and to where steel bulkheads cross. The armor 13-in. extends 9 ft. above the surface and 8 ft. 6 in. below.

The armor of the gun turrets are 13 in. in thickness; that of the barbettes, 18 in. The conning tower and signal stations have 16-in. armor and all communications are similarly protected. Owing to the economy of boiler weights and the space gained by the single funnel, there is a very large deck area, and the guns have larger arcs of fire.

The Storm of November 7-10

Its Origin, Track and Character Defined by an Expect in Meteorology

By Alfred J. Henry, United States Weather Bureau

ON FRIDAY morning, Nov. 7, 1913, a storm was centered over southeastern Minnesota. It was in no wise different from many other storms which in the course of a year approach the lake region from the west. The winds over Lakes Michigan, Huron and Superior were mostly southerly, and of force commonly expressed as light to fresh. A little rain had fallen and the weather was cloudy.

Warnings: The proximity of the storm to the great lakes, and the probability that it would increase in energy as it moved eastward, caused the forecaster to telegraph, at 10 a. m. Friday, the following warning to all lake stations except those along the western portion of Lake Superior, "Hoist storm warnings, 10 a m., storm over upper Mississippi valley, moving northeast, brisk to high southwest winds this afternoon and tonight, shifting to northwest Saturday on upper lakes. Warnings ordered throughout great lakes."

A similar warning was telegraphed to stations along the western portion of Lake Superior, except the direction of the winds was made northwest instead of southwest.

The life of a warning is 24 hours unless previously lowered by direction of the forecaster. The warnings of Friday would, therefore, expire by limitation at 10 a. m. Saturday, unless otherwise directed by telegraph. No warning is lowered, however, if, at the time of its expiration, the wind is blowing with storm force.

During the daylight hours of Friday, Nov. 7, the storm moved northeastward to the vicinity of Marquette, Mich., where it was central at 8 p. m. 75th meridian time, Friday night. Up to that time, with the single exception of a 60-mile wind at Duluth, Minn., there had been no high winds on any of the other lakes, and no extraordinary weather had been reported.

Moving Slowly Eastward

During the night hours of Friday, the storm moved slowly eastward, and was central Saturday morning in the vicinity of Sault Ste. Marie, Mich., with lowest pressure 29.45 inches. The winds were southwest to south; rain was falling over Lakes Huron and Erie, and northwest winds with snow prevailed over the eastern portion of Lake Superior. At this time Saturday morning the winds were not particularly dangerous, the highest velocity reported being 38 miles per hour at Marquette, Mich. Moreover, the barometric gradient indicated considerably stronger winds than were actually experienced, and this fact, from the forecaster's point of view, was the only disturbing feature of the situation. Nevertheless, at 10 a. m. Saturday morning an order was telegraphed to all stations along the western portion of Lake Superior to continue the northwest warnings that had been flying since 10 a. m. Friday, and an order was also sent by telegraph to change the direction of the indicated winds from the southwest to the northwest on the eastern portion of Lake Superior, over the whole of Lake Michigan and Huron, and on Lake Erie as far east as Cleveland. Southwest warnings were also ordered to be continued from Erie to Oswego. The life of these warnings, therefore, extended to 10 a. m. Sunday, Nov. 9.

During the daylight hours of Saturday the storm changed direction and moved very slowly southeastward from Sault Ste. Marie; it was central at 8 p. m. Saturday night in the vicinity of Alpena, Mich., with lowest pressure 29.52 inches, a slight rise in pressure since morning. Still the force of the winds was not so great as the pressure distribution indicated. The highest wind velocity was 42 miles per hour from the northwest, at Marquette, Mich. On Lake Michigan the wind attained a velocity of 34 miles per hour from the northwest and north, at Escanaba, and 36 miles per hour from the northwest at Green Bay. On Lake Erie a velocity of 44 miles per hour from the southwest was recorded at Toledo, O. No storm velocities were recorded on Lakes Huron and Ontario.

During Saturday afternoon the southern end of the storm, then over Georgia, appeared to be increasing in intensity, so much so that at 9:30 p. m., at which time it had reached the South Carolina coast, northwest storm warnings were hoisted from Fort Monroe, Va., to Southport, N. C.

Between 8 p. m. Saturday and 8 a. m. Sunday the southern end of the storm increased very much in intensity and moved rapidly northward to Virginia, where it was located Sunday morning. Pressure at its center had diminished to 29.10 inches, and it was attended by rain from Florida to the lower lakes. Instead of moving from Virginia northeastward to the New Jersey coast, a course that is followed perhaps in 90 per cent of storms which are centered in Virginia.

Generated on 2024-07-27 01:47 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

the storm moved a little west of north, or from Virginia to the western portion of the province of Ontario. This movement, which was not wholly unexpected, led to the precipitation of heavy snow over the great lakes and the Ohio valley, which must have set in over Lakes Huron and Erie early Sunday morning. The immediate effect of the snow storm was to obscure from vision all land marks, buoys, range lights, and other aids to safe navigation, and with the obstruction of vision by the snow the wind began to increase in strength and blow strongly from the north and northwest. The moment the snow began the condition of the vessels afloat on the great lakes began to grow desperate. In a blinding snowstorm, the wind increasing, and the barometer falling, they were completely at the mercy of the wind and water. Wireless advices as to the severity of the storm, even if they could have been obtained, would not have aided them in their plight. The time for saving action had passed. Had the storm broken over them in the daytime there was still a chance of making a safe harbor, but in the darkness of the night, made the more intense by the heavy clouds, the hope of making a safe harbor must have quickly vanished. Advices by wireless would not have aided in the slightest, for at best the only advice that could have been communicated was the fact that the storm had increased greatly in violence and that snow would continue for 24 hours or longer, and that information would not have been timely, since the storm was upon them Sunday morning, although it is believed that it did not reach its full violence until Sunday afternoon or night.

All day Sunday, all through Sunday night, and for the greater part of Monday, the snow and wind storm continued unabated. The center of the storm on Sunday night was over western Ontario, in the vicinity of Buffalo, where the barometric pressure had fallen to 28.76 inches. During the next 12 hours it scarcely altered its position, but by Tuesday morning the worst was over and the storm had begun to dissipate over the lower St. Lawrence valley.

Below are the maximum wind velocities of Sunday and Monday, in miles per hour:

Sunday, Nov. 9

Lake Superior—Marquette, 34 northwest; Sault Ste. Marie, 36 north.

Lake Michigan—Escanaba, 36 north; Green Bay, 38 northwest; Chicago, 44 northwest; Grand Haven, 48 northwest.

Lake Huron—Port Huron, 62 north; Alpena, 42 north; Detroit, 48 northwest.

Lake Erie—Toledo, 44 northwest; Cleveland, 60 northwest; Sandusky, 36 northwest.

Lake Ontario—Oswego, 36 south.

Monday, Nov. 10

Lake Superior—Duluth, 34 northwest; Houghton, 30 northwest; Marquette, 48 northwest; Sault Ste. Marie, 36 northwest.

Lake Michigan—Escanaba, 32 north; Green Bay, 40 northwest; Milwaukee, 38 northwest; Grand Haven, 56 northwest; Ludington, 48 north.

Lake Huron—Alpena, 48 northwest; Saginaw, 43 northwest; Detroit, 52 northwest.

Lake Erie—Toledo, 52 west; Cleveland, 60 west; Erie, 36 southwest; Buffalo, 74 west.

Lake Ontario—Oswego, 38 southwest.

So much for the story of the storm.

Replying to Adverse Criticism

Much adverse criticism has been aimed at the Weather Bureau on account of its warning service,—stress being laid on the point that the bureau did not clearly indicate the intensity of the storm. We had supposed that after a service of 30 odd years in forecasting storms for the lake region, that people of that part of the country were familiar with the fact that the weather service makes no pretensions of ability to forecast the intensity of natural phenomena. While it is able to forecast "rain," it has never attempted to distinguish between "light" rain and "heavy" rain. So with storms, it is possible to forecast the occurrence of a storm in general terms, but whether the storm winds will blow 20 miles an hour or 60 miles an hour at any specific point it is impossible to state with that degree of accurancy that would be necessary in order to make the statement of practical use.

It is true that in subtropical waters it is customary to display what is known as the "hurricane" signal to announce the expected approach of one of those storms. The display of that flag is, however, never made unless the circumstances fully justify it. In answer to those critics who have made the claim that hurricane flags should have been displayed on the great lakes for the recent storm, we would point out that at no time was the lake region threatened with a West India hurricane, that the storm which actually occurred bore not the slightest resemblance to a West India hurricane. In the first place the wind did not approach hurricane force, and in the second place it was the combination of snow with fairly high winds that undoubtedly caused so many vessels to founder.

On many occasions in the past, as at Cleveland during the 18 years, 1892-1909, there were 31 storms with winds as great or greater than those experienced on Nov. 9 and 10, 1913.

Warnings for the great lakes are limited to two classes, viz.: the small craft, and the storm warning; the former is defined as a warning of moderately strong winds that will interfere with the safe operation of small craft, such as those engaged in fishing, towing, motor boating and yachting. It is used principally in the summer season. The small craft warnings are intended to cover winds that are not strong enough to inconvenience sea-going vessels. The storm warning—a red flag with a black center—is intended to convey to vessel masters and others the information that a condition for winds dangerous to navigation is present, and that such winds may be expected within the next 24 hours.

Omniscience Not Claimed

The bureau does not claim omniscience, and cannot, therefore, guarantee the appearance of the expected winds in all cases; the actual winds may either fall short of or exceed in strength the limit of the winds forecast, and probably nobody realizes that fact more than the forecaster who issues the warnings. On the average about 80 per cent of storm warnings are verified, the great majority of failures being chargeable to storms forecast which do not materialize. Very rarely does a severe storm descend on the great lakes without warning.

A vessel with cargo and a complete crew aboard, cannot afford to lay in port except at an expense to the owner, hence the very natural desire of the skipper to get under way. The storm flag has failed before, perhaps it will fail this time, and thus reflecting on the fallibility of mankind, especially a weather forecaster, the skipper gets under way. He comes safely to port and let us suppose receives the commendation of his employer. Thus by easy stages, and possibly by a repetition of this experience, the precepts of the storm flag come to be disregarded—not by all skippers—but by some who possibly prefer to place their reliance upon the staunchness of their vessel rather than the advices of the weather service.

The remedy for this state of affairs

Generated on 2024-07-27 01:47 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

should be sought in a closer co-operation between the weather service and vessel masters as outlined below:

At the outset the forecasters will admit that there are occasions when the indications of the weather chart are not clear and definite, the best that can be said is that a condition favorable for dangerous winds is present. Later on, when perhaps it may be too late, he can advise more fully upon the situation. The point is, and we have touched upon it before in this paper, that the modern art of weather forecasting has not reached that stage of perfection when it is possible to state definitely, in all cases, what will happen 24 hours hence. But the information as to storms must be got to shipmasters in due season, therefore, the forecaster must at times start his warnings before the indications are quite clear as to precisely what may happen. Later, as the storm approaches nearer to the scene of action, he is generally able to supply, for the asking, valuable information as to the progress and development of the storm.

Closer co-operation of the vessel masters themselves would result in a better understanding of the warnings issued. By co-operation is meant, let them in the first place accept the warning in the spirit in which it is given, viz.: not as an absolutely determined fact, but merely, as before stated, as the expression of the *probability of dangerous winds*; and, secondly: let them ask more questions, and apply their own knowledge of storm movement in an effort to correlate the weather conditions experienced when passing from one point to another with the probable storm movement. They will thus be in a position to make intelligent use of the information supplied by the bureau, without blindly remaining in port for a storm of moderate intensity or unnecessarily incurring a risk that may lead to disaster.

It was the custom only a few years ago to literally "hand" to shipmasters everything the bureau had at its disposal. It is quite probable that this custom created the impression in the minds of some masters that if the weather bureau has anything for them they will "hand it to us."

Consulting the Weather Bureau

It is a maxim old as the hills that "God helps them that help themselves." The practical application of this time honored maxim to the case of vessel masters is that whenever they see the danger flag displayed, they make it their business to call up by telephone the nearest weather bureau office and inquire about the probable course of the storm, when it is likely to break, and whether or not the officials will venture an opinion as to its intensity. If a local weather bureau office cannot be reached in person, or by telephone, any vessel flying the American flag has the privilege of telegraphing the nearest forecast center for the information as above, and the tolls, both of the inquiry and the answer, will be paid by the National government. This regulation still prevails but is probably more honored in the breach than in the observance.

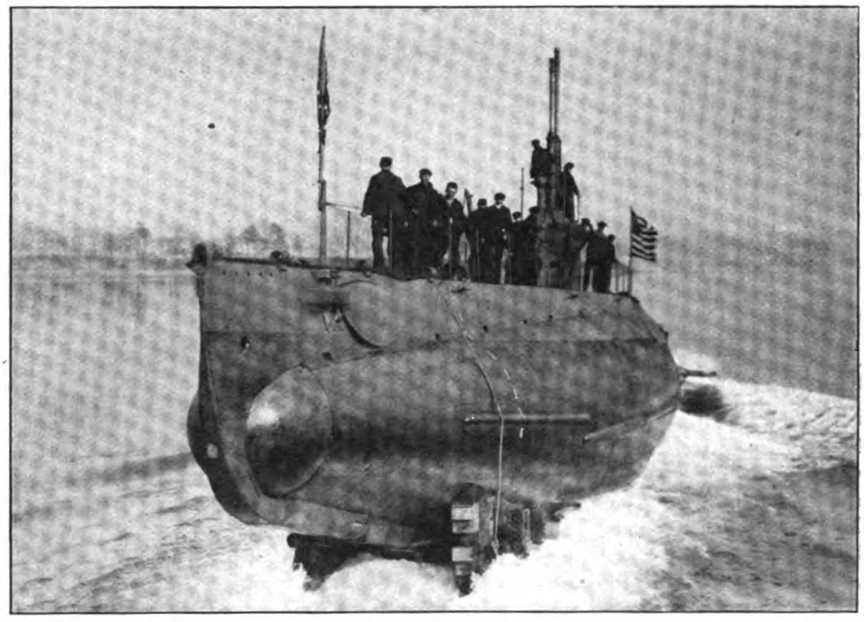
It may be that the vessel master will have time to make the next port before the storm is liable to break; in any event he is forewarned, and the better prepared, therefore, to combat adverse conditions. Another point upon which closer co-operation is insisted upon is that each master shall himself take note of the weather and be ready to seek a port of safety as soon as threatening conditions obtain.

We will suppose, for the sake of argument, that each vessel that passed into Lake Huron via. the "Soo" during the recent great storm saw the storm flag flying at that station, and likewise, that each vessel that passed into Lake Huron by way of the Detroit river not only saw the storm warning displayed at Detroit, but received a copy of the forecasts, and warnings from the mail boat in the river opposite Detroit, and, therefore, all of them must have known of the weather conditions which existed at that time. While at the moment there may not have been anything observed that presaged of danger, surely sometime on Saturday night, when it began to snow, a look at the barometer must have convinced every skipper on that lake that he was face to face with a desperate situation. Before the snow began probably every man of them knew, approximately at least, where he was. Did he then lay his course to the nearest haven of refuge, or proceed in the hope of weathering the storm? The answer will never be known.

The toll of human life and property taken by the elements on Nov. 9 and 10, 1913, was a high price to pay for a realization of the fact that the modern lake vessel is not immune to loss by storm.

Submarine Boats K-5 and K-6

Submarine torpedo boat K-5 was launched from the yard of the Fore River Ship Building Corporation on March 17 and K-6 on March 26. These vessels are of 519 tons displacement and are the largest yet constructed for the United States navy, being practically sister ships of K-1 and K-2.



LAUNCHING A SUBMARINE AT THE FORE RIVER YARD

The keel plates of battleship No. 39 were laid at the Brooklyn navy yard during the second week of March, and Commandant Albert Gleaves predicts that she will be completed within 10 months. Well, time will tell.

A. L. Hopkins has been elected president and Homer L. Ferguson, vice president and general manager of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

Generated on 2024-07-27 01:47 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Charles Buchanan

Charles Buchanan, for whom the office of principal of chief ship surveyor's staff was created, is one of the best known naval architects of the day, and created a very favorable impression in ship building circles in the United States during the visit to this country three or four years ago. He has been associated with mercantile ship building since his young manhood. Prior to joining the service of Lloyds Register in 1880, he was chief draftsman for A. McMillan & Sons. Later, he enjoyed a varied experience in a number of the shipbuilding ports. Since 1891 he has been stationed in London, holding for the last seven years the position of assistant to the chief ship surveyor. For many years past he has been associated particularly with the duty of dealing with plans of vessels submitted for the committee's approval and this work has made him an authority in the latest development of shipbuilding practice throughout the world. He is a member of the departmental committee on bulkhead and watertight compartments in ships.

MR. CHARLES BUCHANAN

Modern Cargo Ships

Striking details of recent changes in the construction of cargo vessels were given before the Institute of Shipbrokers, London, on March 18, by J. W. Isherwood. Sir Walter Runciman presided.

Mr. Isherwood at the outset suggested caution in extending the growing practice of building vessels without longitudinal bracing. He remarked that the recent disaster to the Oklahoma, which was a ship actually possessing side stringers, pointed to the risks to which stringerless ships were exposed. A stringerless ship was convenient, inasmuch as there were no shelves for the lodgment of grain and coal, and the cost of construction was less, but it would appear that the plating was more vulnerable to damage between the frames, and the whole ship exposed to greater injury from broaching on collision.

The corrugated-sided vessel had from all accounts proved a successful type for small cargo ships. It was claimed that the corrugations had the effect of improving the steering qualities of the ship, that the rolling and pitching in a seaway were reduced and the speed increased. There was a gain in the deadweight capacity of an amount equal to the corrugations. The method of construction had not been adopted in cargo vessels of large size or of high speed, so that it could not be stated whether proportionate economies would be maintained.

The Ayre-Ballard or arch principle of construction consisted of a transverse arch over and above the normal hull and forming an integral part of the same. The arches enabled pillars to be dispensed with, thus giving a comparatively clear hold. The type would appear to be mainly suitable for single-deck vessels, but up to the present time steamers of large size had not been constructed according to the arch principle.

Several interesting comparisons were made by Mr. Isherwood of ships of certain styles constructed in the ordinary way and on the Isherwood principle of longitudinal framing. Comparing a single-deck cargo vessel having the dimensions of 399 ft. by 51 ft. molded by 28 ft. 3½ in. molded, a deadweight carrying capacity of 8,000 tons, and a draught of 24 ft., with a vessel of similar dimensions and draught, the vessel designed on the Isherwood system was shown to have an increased deadweight capacity of 200 tons, or 2½ per cent of the deadweight capacity of the ordinary vessel, and a longitudinal strength 15 per cent in excess of that built on the ordinary transverse system. Detailed comparisons showed the Isherwood ships to be stronger in every detail.

"Generally speaking," added Mr. Isherwood, "the floor of the vessel is carried out flat to the side of the ship instead of peaking the bilge brackets, as was the practice in vessels of ordinary construction. The flat floor gave an increase in cubic capacity and the absence of beam knees an increase in the capacity for bale goods." In vessels employed exclusively for the timber trade the loss in capacity could be overcome by building vessels broader or longer than usual. In one actual instance where an order was given for a timber ship of 16,500 tons deadweight with the same internal capacity for long timber as the transversely built ship, it was found that an increase on the original dimensions of 15 ft. in length gave an increase in deadweight of 900 tons, with the use of 200 tons less steel than would be required in an ordinary vessel of smaller dimensions. Any objection that the Isherwood longitudinals formed shelves for coal and grain might be met by the fact that these longitudinals in a vessel of 8,000 tons deadweight would only accommodate four tons. This could be easily swept off, as the longitudinals themselves formed ladders up the sides of the ship.

The Isherwood construction was better suited for ventilation and rendered the hull practically free from vibration. It also permitted of expeditious cleaning, and opened up the possibility of successfully increasing the length of a given vessel while still retaining the same breadth and width.

In conclusion Mr. Isherwood pointed out that during the period of the oil ship boom no fewer than 99 ships of this character, of 528,000 gross tons and approximately 792,000 tons deadweight capacity, had been contracted for. The increase in

Generated on 2024-07-27 01:48 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

the general structural strength made the system an ideal one for "tanker" construction. The fact also that the system allowed much more hydraulic riveting in the shipyard was also in its favor.

Sir Walter Runciman stated that there was nothing to equal turret steamers as carriers of cotton, coal and grain. If one attempted to convey a deck cargo it might get lost. In the "three island" deck vessels there was a class of economical workers. The "long bridge" vessels were excellent for certain classes of cargo. Hurricane deck vessels had been found more expensive than the "three islands," but the great thing about them was their speed. Today naval architects are paying more attention to producing vessels of finer lines than heretofore for speed, but they will not necessarily be of high power. Those that have been put into use

Pittsburgh Steamship Co.

A Great Variety of Important Topics Were Discussed and Disposed of at the Tenth Annual Meeting of the Pittsburgh Steamship Co.'s Officials, Masters and Engineers

THE tenth annual meeting of the Pittsburgh Steamship Co.'s officials, masters and engineers was held at the Hollenden, Cleveland, March 23 to 25, and was generally credited as being the best that the company has held so far.

In opening the session, H. Coulby, president and general manager, said that he desired to make safety the keynote of the meeting. He added that possibly he might not have anything new to say, but that in a company as large as the Pittsburgh Steamship Co. changes are always taking place and some of the younger men have not had the advantage of the discussions that have taken place at preceding meetings. He thought that emphasis should be placed upon everything that tends to safeguard life, whether at sea or in port. "We have had the committee of captains working all winter," said he, "and more than ever am I convinced that it was a step in the right direction to have the committee of captains take up and discuss this question. The recent visit of the captains to Washington to appear before the committee of the house of representatives on the La Follette seamen's bill was the best thing possible. I have been informed that the committee of captains made the best impression that has ever been made upon a congressional committee, far better than any committee that we have ever sent, and that is because they were practical men dealing with a practical condition."

Details of Management

A. F. Harvey, assistant general manager, took up in detail various matters that had previously been considered by committees of captains and engineers. He said that the inspectors of steam vessels are going to be very critical in inspecting boats hereafter and he wanted all possible assistance given to them. He urged a thorough examination of deadlights and wanted no more broken deadlights carried on the ships. He urged that coal bunkers and floors should not be left in such shape that they cannot be got at if repairs are needed. He said that a lot of money had been spent in repairing leaks in the texas and cabins that could have been avoided with care. He urged a particularly careful inspection of all deck beams and stanchions and cargo holds. Mr. Harvey stated that during the winter all wooden hatch covers had been replaced with new ones and advised the masters to be very critical in their examination of hatch covers throughout the season. A new form will be supplied to the masters in making recommendations for repairs. This form will be as complete as it is possible to make it in order that the masters may not overlook anything.

Captains' Committee

The captains' committee has approved the plan of keeping a separate book for the steering engine which will contain complete chronicling of length of service of the various parts, so that a new officer going aboard will know exactly what to expect. Mr. Harvey also directed the captains to remember that the government inspectors hereafter will want a report direct from the masters of all the repairs in excess of $100 that are made to increase the seaworthiness of the craft. "It is not sufficient that this report shall come from the office; it must come from the master." Some of the boats this year will have new draught marks on the rudder merely as auxiliary aid in establishing the draught, but the marks are not to be depended upon until verified in actual practice.

It was ruled by Mr. Coulby that whenever a lifeboat is put off for repairs it will not again be allowed to be put aboard any boat until it has been passed upon by the government inspector. The committee on wheel chains recommended that all wheel chains in need of attention should be returned to the factory, worn links replaced, and the chain properly annealed.

"I remember," said Mr. Coulby, "that a welded link was submitted to me once. It might as well have been welded with putty in so far as its usefulness was concerned. I tried at that time to get the vessel men on the lakes to induce some one to establish a plant at the Sault for testing and welding chains on condition that we would give the plant all of our business. It did not go through and we have, therefore, to go it alone. We will make arrangements with a chain factory for testing all our chains before they are sent back to the ship. I confess that I have myself been negligent in the past in letting the purchasing agent of a ship yard select our chains. We pay roundly $350,000 for a boat and then permit the purchasing agent to put aboard a chain upon which he can save possibly a few dollars. Hereafter it will be stipulated that our wheel and anchor chains will have to undergo the most rigid test there can be found. We will hereafter designate the kind of chain we want.

Individual Responsibility

"But what is uppermost in my mind and what I am driving at is this: In this big organization of ours we have all kinds of departments and by reason of the fact that each department passes upon the things within it, we are likely to lose sight of the question of personal responsibility. You may be inclined to take the department's O. K., but you must remember that the department simply passes upon the fleet as a whole, and that the question of the individual ship is absolutely up to the master and engineer of that ship. If there is anything on the individual boat that is not right, it is up to you to report it and to

Generated on 2024-07-27 01:50 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

see that it is remedied. Since the big November storm I have thought a lot along the line of the question of individual responsibility of the masters. When the government inspectors come down to your boat, I don't want anything doctored up to pass inspection. I forbid you to do it. When the government inspector comes aboard your boat he has a great responsibility resting on his shoulders and he should be shown everything.

Attention to Hatches

"Now as to the question of hatches, we will always give the ship the benefit of the doubt. If the hatches are in need of attention, don't let them go another year, even if you think they safely can; repair them at once. With the boats that have wooden hatches, make it a point to carry a few extra covers with you, and a few extra parts of fasteners. If you want them see that you get them. That's why we keep the shore organization. I repeat that the shore force has the whole fleet to look after, but the captain has the individual boat. That's up to him and he must be personally responsible. If ever the Pittsburgh Steamship Co. gets away from the idea of the individual responsibility of the master, it will begin to lack in efficiency. The shore force is only an auxiliary force after all. If the vessel is not seaworthy in your opinion, don't take her out, even if I were to tell you to. Remember also that it is expressly against our wishes to cover up anything that the government inspectors ought to see. In this connection I have heard rumors that the inspection in some ports is more rigid than in others. I don't know whether there is anything in that, but I don't want our boats inspected in the easy places. The government employs our inspectors to enforce the law and I hope the inspectors will be as severe as the law allows them to be. Never be in a hurry to get out if there is anything you want to get your boat ship-shape. A delay of from 24 to 48 hours is of no importance."

Mr. Coulby then asked for the report of the committee on outside and inside courses and Capt. Hunt reported that everyone was unanimous for the outside course, Capt. S. C. Allen adding that some of the outside lines were also going to adopt it.

"We have been working very persistently on this question of inside and outside courses for several years," said Mr. Coulby. "When I first brought it up it did not have many friends, but it had in it this question of safety. It takes more time and money to run the outside course because it is 27 miles longer and it burns up that much more coal. I think the growth of good feeling among captains and owners has been promoted by the working together for many years in the direction of safety regardless of profit. We have now got a good many of them trying it and it is about over the center and I think it is about the best answer that we can make to the criticism that the ships are being driven in order to make money. We tried to get men interested in this question of outside courses before we made it a rule, but I believe now that the time has come when it should be made an absolute ruling that the Pittsburgh Steamship Co.'s vessels should follow the outside course. It is better to work this question out ourselves than to have the government inspectors work it out for us. I don't want the Farrells, the Dinkeys and the Coreys cutting any corners. It will be a definite ruling that all our boats will use the outside course hereafter."

The question of going north about on Lake Michigan was put to a vote of the captains and was unanimously adopted. "I have always been in favor of north about," said Mr. Coulby. "Even though it is the longer way to South Chicago, it is also the safer way. Any ruling, however, that it made or ever will be made on courses is predicated on weather conditions; but if I should ever call you in for going south about on Lake Michigan you must be mighty careful to give me the maximum velocity of the wind."

Master of the Ship

The shore force has the whole fleet to look after, but the individual captain has the individual boat. That's up to him and he must be personally responsible. If ever the Pittsburgh Steamship Co. gets away from the idea of the individual responsibility of the master, it will begin to lack in efficiency. The shore force is only an auxiliary force. If the vessel is not seaworthy in your opinion, don't take her out.

Good Barometers

A. F. Harvey, assistant general manager, presided at the Monday afternoon session. It was decided that no ship should go out this spring without a wrecking cloth aboard. Mr. Coulby was insistent that every master should see that his barometer was a good one.

It was recommended that a post card be sent to the president of the Lake Carriers' Association whenever a crib or buoy light is found to be not burning and whenever bridges fail to obey signals promptly. "You will need a lot of cards then," said Capt. J. W. Morgan, "because you cannot go up or down the river at any time without finding a light out."

"I should like to see a thousand cards go into President Livingstone's office a day," replied Mr. Coulby. "If everyone sent a post card in there would not be such a thing as getting away from it. It would make a big impression. If you do it you will see a wonderful change in service."

Uniform signals were urged for all boats and during the year attention will be paid to working out a definite system of signals to be used at loading and unloading docks.

Personal Injury Case

A great part of the afternoon was devoted to consideration of personal injury cases. During the year a deck hand was killed by running over the hatches and falling through an open one, and a master was drowned while endeavoring to fix a tarpaulin in a heavy sea without a life line.

"Now this is a subject," said Mr. Coulby, "that we have been giving a great deal of thought to. There seem to be two factors entering into personal injury cases; one the element of danger, which really is a small percentage, and the other carelessness, which is a very great percentage. Can we devise some practical way of checking this thing up and limiting these personal injuries? It all goes back to the question of personal responsibility. While I cannot be held responsible for a man running over the hatches, yet nevertheless when you take the sum total of all the cases, there is a lack of efficiency apparent in the organization, which is a reflection upon me. The master cannot do all these things individually; he cannot have his eyes everywhere, and he may have been taking the boat out when this lad ran over the hatches; but the responsibility should be delegated somewhere. The men should be prohibited from walking over the hatches at all. The place to walk is on the side of the ship. Now we have a life line running from forward to aft. Possibly there might be side lines attached to this life line that may be handy in heavy weather. Rules, however, can only be enforced by the individuals and all I can do is to keep on talk-

Generated on 2024-07-27 01:50 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

ing. It is only by the sum total that I can judge things."

It was decided to appoint a committee on safety ashore, consisting of Alex. Langell, Capt. Watt and Capt. J. W. Morgan, who retires for age this year. Whenever Capt. Morgan has time he will go aboard the boats and report to the office the manner in which the rules are observed. Safety signs will also be placed aboard ship to mark the dangerous places. In order to stimulate interest in safety and to bring pertenently home the question of individual responsibility, a committee will be appointed aboard ship headed by the first mate and first engineer, comprising both forward and after crews, and each committee will have a safety pennant. Prizes will be distributed according to the records achieved. While all the details of the plan are not yet worked out, it is hoped that it will accelerate the movement of safety and serve to localize responsibility aboard ship.

Making for Safety

Mr. Coulby said that the office would furnish anything to the ship that the master believed might tend to safeguard the lives of the crew. "Ask for it," said he, "and you will get it. You would be surprised at the number of cases of pure carelessness. We have made wonderful progress in the elimination of accidents to the ships themselves during the past few years and we must give the same amount of care, watchfulness and study to the elimination of our personal injury cases. Enlist your men in the movement for the abolition of personal injuries. What we want is to prevent the accident. You may have different rules on different boats because they may be considered differently, but let's see if we can't make a step forward in this line this year."

It was announced that Thomas Leroy, of the Rockefeller, had won first prize for the best kept log. In this connection honorable mention was made of J. Jack, of the Dickson; J. B. Allair, of the Rogers; J. C. Dobson, of the Empire City; W. F. Meister, of the Linn, and Fred Tholey, of the Mariska.

At the second day's session, the first thing taken up was the proposed establishment of a bridge hour in Duluth, which, owing to the current and peculiar conditions obtaining in Duluth, was held to be undesirable. Moreover, many of the captains felt that the traffic did not warrant closing of the interstate bridge at any definite time.

At the suggestion of President Coulby, the masters were invited to discuss the use of storm oil. He said that he had always been in favor of it himself and pointed to the graphic illustration of its usefulness in the case of the Volturno. He thought that every ship in the fleet should have oil tanks with proper connections for its distribution. Practically every master that spoke testified that a very small quantity of oil would kill the combers and thereby destroy the force of the sea. Captain W. J. Hunt said that he had always used oil in every ship he had been in. He has two oil tanks on the Dinkey, distributing it to the sea by means of a garden hose, which does the work very satisfactorily. Captain W. W. Smith advocated that every boat should carry two or three barrels of oil.

The morning session was largely taken up with the annual talk of Hermon A. Kelley, counsel for the company. Including the meetings of the old Minnesota Steamship Co., Mr. Kelley has now been in attendance at these meetings for the past 15 years and obviously there is a great deal of repetition in what he has annually to say. As Mr. Kelley has year after year preached caution in fog, it was inevitable that he should have paid some attention to the recent comments on the subject by a very learned judge, saying:

Safety is Not Sacrificed

My opportunities for observation of the policy of many of the large vessel owners have been as good, perhaps, as those of most men, and I have no hesitation in saying that my experience leads me to believe that nothing has been further from the minds of these owners during the past ten years than the sacrifice of safety to money-making. In fact, I believe they feel, as the result of long experience, that any practice which lessens the degree of safety with which their vessels are operated cannot, on the average, be a money-making practice.

A Distinct Surprise

"To one who has been attending the annual meetings of the masters and mates of the larger fleets on the great lakes for the past two years, and especially to one who is familiar with the policies of the management of such fleets, as those operated by the Pittsburgh Steamship Co., the Cleveland-Cliffs Iron Co., Mitchell & Co., M. A. Hanna & Co., and Pickands, Mather & Co., this utterance of the court came as a distinct surprise. As above stated, I, personally, have been invited every year during the past decade or more to address the masters of several of the above named organizations, and have never, on a single occasion, I believe, omitted a most vigorous presentation of the necessity, not only legal but economical and humane, for moderate speed in fog and for promptly checking to bare steerage way and even stopping all headway upon hearing the signal of another vessel, apparently not more than four points from dead ahead, until the approaching vessel is definitely located and danger of collision is past. And I can testify that my own repeated and urgent presentation of these warnings and admonitions have never failed to receive the earnest and outspoken endorsement and support of the management. Indeed I have not infrequently heard the latter take a tone which amounted to no less than a threat of the summary dismissal of any master who attempted to make time at the expense of safety.

Opportunities for Observation

"Even more eloquent than words of caution and instruction is the consistent attitude of the vessel managements with which I am familiar toward the whole subject of obedience, not simply to the rules of navigation, but to the special instructions relating to extra precautions with which most of these managements have supplemented the statutory rules.

"My opportunities for observation of the policy of many of the large vessel owners have been as good, perhaps, as those of most men, and I have no hesitation in saying that my experience leads me to believe that nothing has been further from the minds of those owners during the past 10 years than the sacrifice of safety to money-making. In fact, I believe they feel, as the result of long experience, that any practice which lessens the degree of safety with which their vessels are operated, cannot on the average, be a money-making practice.

"It is true there have been exceptions to this rule. It would be strange if, among the numerous operators of ships on the great lakes, there were not a few who were inclined to take chances, but I believe that these men have, for many years, been the great exception to the rule and, moreover, that these exceptions are every year becoming fewer and fewer. This has been particularly the case since the formation of the Great Lakes Pro-

Generated on 2024-07-27 01:50 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

tective Association, the statistics and salutary lessons of which have done much to convince the few men who still adhered to the old methods of loading too close to the bottom, and crowding too near the limit of safety, either in speed or otherwise, that nothing is to be gained, in the long run, by such a policy.

"I feel convinced that there is not a man among you masters who will say that he has ever received or expected reward or commendation from this company for making time at the expense of safety, or that he has ever been penalized or reproached, by word or act, for exercising the discretion committed to him as a master on the side of caution, whether in the matter of speed in fog or any other detail of practical navigation.

Bygone Practice

"I cannot but conclude, therefore, that the learned judge who uttered the censure upon vessel owners which I have quoted, either received his impression from some one who may have been familiar with the practices on the great lakes 10 or 15 years ago, but who is not aware of the enormous change for the better that has taken place, or from some isolated instances or old practices which may still subsist as exceptions to the general rule now prevailing which unquestionably is "safety first".

In fact, an examination of the records of the past five years shows that collision cases have been reduced from 125 to 50 and accidents of all characters from an average of 428 to 150; in other words, practically eliminating two-thirds of them.

Mr. Kelley then discussed the rule governing the navigation of a ship in fog. This rule reads:

Every vessel shall, in thick weather by reason of fog, mist, falling snow, heavy rain storms, or other causes, go at moderate speed. A steam vessel hearing, apparently not more than four points from right ahead, the fog signal of another vessel shall at once reduce her speed to bare steerage way, and navigate with caution until the vessels shall have passed each other."

Moderate Speed

Mr. Kelley said that he could not attempt, nor could any court attempt, to define what moderate speed might be. A speed that under certain conditions might be extreme caution might in other instances be extreme carelessness. As almost all the courses on the lakes, however, are highways of commerce, he did not consider a slight steam reduction to be sufficient. He held that if the latter part of the rule was invariably observed, that of reducing to bare steerage way upon hearing another vessel not more than four points from right ahead, that practically nine-tenths of all the fog collisions would be eliminated. He advocated a prompt reversal of engines if necessary, in order to get down to bare steerage way at once.

Question of Suction

Mr. Kelley then discussed the question of suction which has not latterly had a part in these meetings, being a force now well recognized by the courts. However, one or two interesting points have crept in lately, especially the Princeton-Glidden case, in which it was held that the bow of the Princeton in overtaking the Glidden had exercised a pushing force which caused the Glidden to take a sheer. No case of that character had ever come before a court before. The Princeton was condemned by the lower court, the court holding that such a force did exist. The case was reversed upon appeal, however, on the ground that many other reasons might have caused the Glidden to take a sheer. Quite a number of captains testified that no such force emanated from the bow. Mr. Kelley held that it would not be wise to conclude that when the bow of a larger vessel comes abreast a smaller vessel there may not be some theoretical influence. He urged them never to undertake to pass another vessel in restricted channels when there was any likelihood of meeting a third vessel. Speaking of the subject of lookouts, he said out of 14 cases which he had tried during the winter, eight of them had hinged on the absence of a lookout at the proper place. Most of these cases concerned maneuvering about docks where, if lookouts had been established on the fantail or at other places from which good command of possible danger might be had, the accidents could have been avoided.

Several of the captains appeared desirous of reverting to the subject of running in fog and wanted some definition of moderate speed, but Mr. Kelley stated that the Supreme Court had frequently said that it could not lay down a rule of moderate speed and that no government inspector would take the responsibility of doing so. He then repeated what he had previously said; that if the vessels checked to bare steerage way upon hearing a vessel apparently not more than four points from right ahead that nine-tenths of all the collisions in fog would be eliminated.

Stop the Engines

"The court," said Mr. Coulby, "seems to have laid down a rule in determining moderate speed by the amount of damage done. What moderate speed may be is an open question. It is impossible to lay down a hard and fast rule and I am not going to attempt to do so. You masters have passed an examination on rules and all know what they are. I will say that the collision cases that I am most afraid of are the ones in which it is shown that the engines were working ahead. If the engines are stopped that condition cannot possibly arise. Now, never since I have had charge of ship operation, the promotion of men, the distribution of prizes, have I ever taken into consideration the time the men made in the ship, and there will never be any change in that particular. I have never asked the auditing department for a record of mileage or the earnings of any yessel. In making up my mind I am governed wholly by the question of safety and the freedom of the ships from accidents and on that alone. I want this game played just as safe as it can be played. I appreciate all the conditions that collision cases that occur, either both collisions that occur, either both ships have heard each other or one has heard the other. You ought to be able to tell from the weather conditions whether there is not a strong probability that the ship was blowing to your before you heard her. If the weather conditions are such that you cannot hear or there is a strong probability that you are not hearing, it is a dangerous condition and you should govern yourself by it. Weather conditions must always have a bearing in determining this point. I don't believe a danger signal should ever be blown in a fog without the engine

Safety First

Never since I have been in charge of ship operation, the promotion of men, the distribution of prizes, have I ever taken into consideration the time the men made in the ship and there will never be any change in that particular. In making up my mind I am governed wholly by the question of safety and the freedom of the ships from accidents, and on that alone. I want this game played just as safe as it can be played.

Generated on 2024-07-27 01:51 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

being stopped. If it can be proved that the engine was stopped, I would not be willing to allow half the damages. I would want my half cut off pretty near the end. But if the engine was working ahead I am ready to divide all the time."

Conference with Dock Agents

Tuesday afternoon's meeting was devoted to a joint conference with the dock agents at both upper and lower lake docks. In opening the meeting with the dock people, Mr. Coulby emphasized the fact that the keynote of the meeting was safety to the men. "I want," said he, "the hearty co-operation of the docks to this end. I think before our ships start out in the spring that I will make the rule forbidding any ship to leave port before her hatches are on. Some masters think that the dock people won't like this and that as soon as the last ton is aboard they want them to get away from the dock. I don't believe we will have to sacrifice safety to speed in this particular because by the exercising of a little flexibility we can work together and most of the hatches will be on by the time the last spout is lifted."

The meeting was then turned over to E. C. Collins, who has direct charge of traffic with the docks. He welcomed the men very heartily and gave a short resume of the year's work. The only record that was broken during the year was in total tonnage moved, 17,155,000 tons, as against 16,111,000 tons for 1912. Neither at upper nor lower lake ports was dispatch quite as good as in 1912. The Northwestern dock led again with an average of 1 hour 22 minutes per 1,000 tons, the Iron Range being second with an average of 1 hour 43 minutes per 1,000 tons. At the unloading docks the Superior dock at Ashtabula led with an average of 1 hour 33 minutes per 1,000 tons, the P., Y. & A. being second with an average of 1 hour and 58 minutes per 1,000 tons. These records are the same at both docks for the years 1912 and 1913.

The upper lake problems were first taken up. It was recommended that the docks furnish the vessel with a list of ore in pockets and where it is located and that on the other hand the vessel state the number of tons required and the number of cars to be put in each hatch. After the discussion came the suggestion of creating a standard for each boat and defining about how it should be loaded. If this were fixed within definite limits, Mr. Coulby felt that a sailor in being transferred from one boat to another would be slow in changing loading methods. In this connection Mr. Collins submitted data concerning the distribution of loads in three of the Class A steamers, the boats being divided into three compartments, forward, amidships and aft. In one of the vessels the changes in percentages from trip to trip amounted to 9 per cent or practically 1,000 tons of the total cargo. One vessel, however, was ideally loaded every trip, having 35 per cent forword, 32 per cent amidships and 33 per cent aft, rarely varying from these figures and even then only 1 per cent. "That boat has certainly got a good mate," said Capt. W. J. Hunt. "That boat carries more ore than any boat I ever heard of."

To the surprise of everyone, Mr. Collins said that the boat did carry the biggest cargo of the whole fleet and when one of the captains inquired how that particular mate took the ore one of the dock men replied that he took it faster than any mate he ever met with.

"How is it," said Mr. Coulby, "that that man is only a mate?"

Mr. Coulby said that it was clear he would not be anybody's mate much longer but that he would have to find him another job.

The dock agents at lower lake ports submitted a number of recommendations touching upon ladders, lights in cargo holds, cleaning deck end holds, holding vessels to dock, vessel damage to docks and bulkheads and bulkhead doors. The list of the dock agents present was as follows:

Thomas Owens, Two Harbors; J. W. Kreiter, Two Harbors; J. M. Clifford, Escanaba; G. J. Quigley, Ashland; C. E. Andrews, Escanaba; O. W. Johnstone, Ashland; George Treviramus, Duluth; G. W. Watts, Two Harbors; P. B. Sullivan, Duluth; H. E. Hansen, Two Harbors; John Sampson, Ashland; H. J. Robertson, Escanaba; J. S. Harland, Marquette; W. F. Morgan, Marquette; J. W. Coria, Ashland; G. M. Stoik, Escanaba; J. C. Morrell, Superior; H. A. Barren, Cleveland; A. S. Chisholm, Cleveland; B. F. Mohr, Chicago; H. A. Brassert, Chicago; J. H. Hearding, Duluth; F. T. Bentley, Chicago; J. F. Townsend, Pittsburgh; John Fritz, Pittsburgh; J. H. Woods, Cleveland; M. Shiras, Pittsburgh; Mr. Whigham, Pittsburgh; R. R. Richardson, Conneaut; C. Walker, Conneaut; P. J. Fickenger, Conneaut; S. J. Blake, Conneaut; W. H. McGowan, South Chicago; C. H. Wheeler, Gary; H. S. Pickands, Ashtabula; C. Montgomery, Ashtabula; W. E. Chilson, Ashtabula; E. O. Whitney, Ashtabula; G. S. Meek, Fairport; W. T. Moore, Cleveland; T. R. Gilmore, Huron; R. J. Aspen, Lorain; James Daniels, Lorain; C. E. Cole, Cleveland; D. K. Smith, Erie; J. M. Amsden, Ashtabula.

The third day's session was a joint one with the captains and engineers, and the entire forenoon was consumed in reading the joint report of the captains and engineers. One of the chief points of interest was the working out on a number of boats of a definite speed for a given number of revolutions, so that the master may have his approximate speed through the water at given signals.

The fresh water tanks will be cleaned thoroughly once a month and the general sanitation of the ship will be in charge of the committee on safety. As it was found that sanitary drinking fountains could be installed aboard ship very easily, it was decided to equip the vessels with them and dispense with individual drinking cups. Separate seacocks will be fitted for filling the fresh water tanks wherever possible with sanitary pump which will be used for no other purpose. It was also decided to dispense with all red table cloths and to furnish white table cloths for all dining rooms. The red table cloths now in stock will be used in the mess room.

The Licensed Officers' Mutual Benefit Association, which was started by the Pittsburgh Steamship Co. two years ago, now has 487 members and has paid 12 death claims since it was formed. The average sum paid has been $940.60 and is about the cheapest insurance known anywhere.

At the conclusion of the morning session, Mr. Coulby stated that the keynote of the meeting was "Safety" and distributed safety buttons among those present.

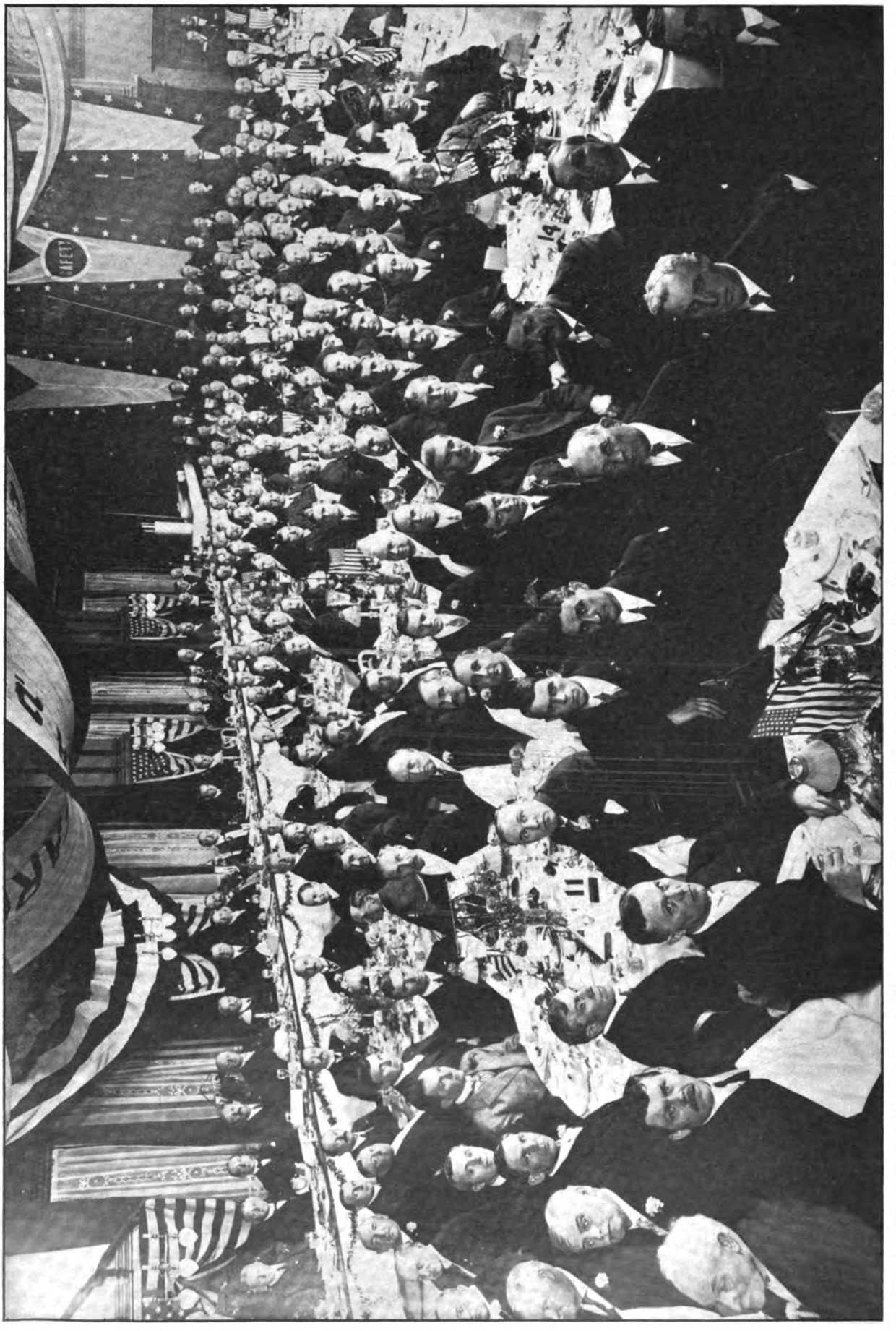
Loading the Ships

Frank B. Smith, chief engineer of the fleet, read a very valuable paper on the loading and speed of ships, as follows:

"During the past season a number of questions have come up relative to loading of ships, speed of ships under different conditions, and in connection with the speed, the question of steering has been brought out quite prominently.

"Taking up first the question of loading the ships, and the hogging in some cases and in other cases sagging of hulls, we have gone into this matter quite thoroughly. I accompanied Mr. Harvey to Duluth and we observed the loading, under Mr. Harvey's direction, of several of the large steamers, and we found that beginning at the after end of the cargo hold, putting a pocket in every other

Generated on 2024-07-27 01:51 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



THE ANN'AL DINNER OF THE PITTSBURGH STEAMSHIP CO.'S OFFICIALS, CAPTAINS, AND ENGINEERS, AT THE HOLLENDEN, CLEVELAND, MARCH 25, 1914

Generated on 2024-07-27 01:51 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

hatch as we went forward to within about the sixth hatch, and then going back to about amidships and coming forward with another run in order to get the ship's bow down, this plan of loading had no bad effect whatever on one of our modern ships, and after this run had been continued through, on taking the draught forward, aft and amidships, the boat was practically on a straight line; that is, she drew as much water at both ends as she did amidships and showed no signs of material sag in the center. It has been proven out in the loading that if the boat is sagged in the middle to any material extent while loading, it does not improve matters any to put extra heavy loads in both ends; that is, the sag in amidships still remains until the boat is unloaded.

"But in a paper read by Naval Constructor, Stuart Farrar Smith, at the recent meeting of the Society of Naval Architects and Marine Engineers, held in New York City, Dec. 11 and 12, 1913, Mr. Smith stated: That in practical experience the middle of the length of a long vessel may move up or down as much as 6 in. with reference to the ends, depending on the conditions of loading without any material injury to the ship, and that a temperature rise of 1 degree Fahr. may cause a raise in the middle of the ship of as much as ⅛ in. Another paper was read by James E. Howard, engineer-physicist, covering a number of experiments of strains on ships' hulls, both at sea and while receiving cargo. Mr. Howard in these experiments used an instrument that would measure the stretching of both the deck and the side plates down to a point of 0.0001 in. and by these tests he was enabled to establish accurately the vibrations caused by the revolutions of the engines separately from the vibrations caused by the weakness of the hull or by the sea.

"It is a well established fact that when the vibrations of the engine are synchronous with the vibrations of the hull, caused by the sea, the vibrations are greatly exaggerated and conditions may be materially improved by either changing the speed of the revolutions of the engine, or by changing the propeller wheel. Also in Mr. Howard's experiments, he kept record of the changes in the form of the hull at different times in the day, according to the temperature, and found that the apparent draught of the ship, taking the marks forward and aft, was changed as much as 2 in., and in the discussion on these papers, it was brought out that the builders or contractors of government ships frequently find in certain classes of vessels that they can increase the apparent dead weight of the ship by even blowing off one of the boilers, and this is done sometimes in order to increase their bonus on their contracts.

"We have had the question up before now of boats being loaded to certain marks at the head of Lake Superior, and when they arrived at the Soo they were drawing more water forward than they were when they left their loading port without having come up a corresponding amount aft. This has generally occurred when they arrived at the Soo during very warm weather, and in talking this matter over with a number of scientific men, who have made practical experiments in such matters, they expressed themselves very freely to the effect that this difference was caused by the sun heating the decks and the upper part of the hull of the ship, and that a partial remedy for this would be to turn the hose on the decks and cool them down. It was stated that if we would take a transit and make observations along the sides of the hull of one of our long steamers, we would find the change in the shape of the ship would be very considerable in the effect of different ways of loading and in the different temperatures in which these observations were taken. I have in mind at the present time a case which happened in Cleveland a number of years ago when the tall electric lighting masts were being built. The foreman in charge of the erection of these masts was somewhat startled on a hot morning when he noticed that the mast was quite crooked, but as the day went by he noticed the shape was changing and in the afternoon the bend was on the opposite side. I mention this to show how much one of our ships would be affected by the heat of the sun on the decks while the bottom of the hull is submerged in cold water.

"In the tests we made on the last three boats, which were put in commission during the season of 1913, we noticed there was a very marked difference in the speed of the ships when good wheelsmen were at the wheel and when poor steering was being done. In one particular case, when Captain Watt was watching the steering in the pilot house and I was watching the wake aft and keeping track of the revolutions of the engine, steam pressure, etc., I noticed in one hour that the speed of the boat had dropped down nearly ½ mile and also that the revolutions of the engine had been slowed up, but the steam pressure had been exactly the same, in fact, it had not varied as much as one pound during this period. I went forward to inquire how things were going there and Captain Watt informed me that the wheelsman had lost control of her and did some very poor steering for a period of 35 minutes out of the hour. Another man was then put at the wheel and he did very good steering, so that the bad steering, lasting only 35 minutes, had slowed the boat's speed down nearly ½ mile during that hour.

"In connection with this, I wish to mention the statement made by one of the naval officers at the meeting of the Society of Naval Architects and Marine Engineers, in which he spoke of a government ship with bilge keels for the purpose of experimenting as to how much bilge keels retarded the speed of the ship. The bilge keels were removed after having made a trial run. Then another run was made over the same course with the same trim of vessel and under almost exactly the same conditions, and it was found that it took more engine power to drive the ship at the same speed without the bilge keels than she had made with the bilge keels, but they discovered the cause, which was poor steering being done. The difference in the power was quite considerable, although I cannot

Proper Loading

We found that beginning at the after end of the cargo hold, putting a pocket in every other hatch as we went forward to within about the sixth hatch and then going back to about amidships and coming forward with another run in order to get the ship's bow down, this plan of loading had no bad effect whatever on one of our modern ships, and after this run had been continued through, on taking the draught, forward, aft and amidships, the boat was practically on a straight line.

Improper Loading

It has been proven out in the loading that if the boat is sagged in the middle to any material extent while loading it does not improve matters any to put extra loads in both ends, that is, the sag in amidships still remains until the boat is unloaded.

Generated on 2024-07-27 01:51 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

say just at present exactly how much it was, and the naval expert said it was a well established fact that contractors in running government ships on their trial trips were very particular to get a good helmsman, as the difference in speed attained in that way made quite a big difference with the amount which they received for their contract.

Steering the Ship

"In connection with that, I wish to remark, without intending to criticize any one, my only object being to improve conditions as much as possible, that the mate on this steamer made it a practice of remarking in the presence of the wheelsman that nobody could steer that boat and keep her close to her course. I noticed, however, that before we got across the lake, and, in fact for the last half of the distance across Lake Huron, the steering of the boat had been very much improved and also the speed of the boat had increased. I will say, however, in connection with this that we did find later that there was too much lap on the controlling valve of the steering engine, and after that was corrected, we were told that the boat steered better, and I saw no reason why she should not steer as well as either one of the new ships that came out last summer. Also after those steamers were put in commission, we found there was great difference in the speed of the three boats, but after making a run across Lake Huron on two of those ships, under almost exactly the same conditions of weather and trim, there was only a difference of three minutes in the time across Lake Huron and only a difference of 135 revolutions. The weather was almost identically the same. There was only a difference of 0.4 of a revolution per minute in the two boats, and another very important point is, that the boat that made the most revolutions in crossing the lake, and also that had the highest revolutions per minute, was the one with the coarsest pitch of her wheel. Both of these boats on these runs were steered very fine, and by actual measurement on the chart made by Captain Watt, there was only ¼ mile difference in the distance they ran, so that this appears to be one of the best real comparisons we have had and demonstrated pretty thoroughly that where the boats are well steered, make good courses, and have the same kind of weather, there is practically no difference in their speed.

"Going into the question of propeller wheels, I think we have demonstrated pretty thoroughly, not only on the tests made last summer but in a great many tests that we had made prior to that time, that in designing a propeller wheel, the first thing to determine is the speed, or the number of revolutions per minute, that we wish the engine to make, and from this we must determine the pitch of the wheel that will give the best results for a ship of the type under consideration; then the area of the wheel must be decided upon and the wheel should be made as near as possible to a true screw, at the pitch that has been determined, and there is found to be a loss if the wheel is shifted from that pitch, either making it coarser or finer. If it is found that a mistake has been made in the dimensions of the wheel, it would be more economical to design a new wheel than to endeavor to correct the mistake by making a worse one in changing the pitch.

Pitching in a Seaway

"While in connection with this branch of the service, I wish to call attention to one thing that I have noticed on some of our ships: That when the vessel is pitching in a sea-

Deprecate Judge Tuttle's Comments

At the annual dinner Capt. D. Sullivan, of Chicago, read the following resolution, which had been signed by every captain and engineer of the Pittsburgh Steamship Co.'s fleet:

Resolved, That this committee deprecate the sweeping assertions made several days ago by Judge Tuttle, of the United States District Court, at Detroit—that the first consideration of all the owners and vessel managers of the Great Lakes is Profit First instead of Safety First.

Resolved, That we beg to contradict this statement so far as it applies to this line and its management, as the latter has always instructed us that safety of the lives and property under our care must always be our first consideration.

Wm. J. Hunt	*C. L. Birtrand*
M. K. Chamberlin	*J. R. McRae*
R. F. Humble	*A. E. Buddemeyer*
H. G. Harbottle	*A. J. Armson*
J. F. Parke Sr.	*H. Gunderson*
W. C. Iler	*H. W. Endelman*
F. J. Crowley	*Neil Patterson*
W. W. Smith	*M. B. Sturtevant*
Joseph Olsson	*Leon Bourlier*
W. E. Stover	*S. E. Mecker*
W. P. McElroy	*George Randolph*
John Burns	*A. Montague*
H. D. McLeod	*G. M. Ackley*
Geo. J. Maloney	*W. H. Kilby*
George H. Lane	*C. D. Secord*
S. C. Allen	*C. S. Boyce*
F. A. Bailey	*A. S. Brown*
A. P. Chambers	*Alex Smith*
W. H. Moody	*W. J. Story*
Frank Rice	*T. F. Zealand*
Richard Jollie	*C. M. Conkey*
Wm. S. Hoag	*W. F. Cottrell*
Chas. Gegenheim	*W. E. Warner*
J. W. Morgan	*George W. Ames*
J. N. Rolfson	*John Noble*
A. C. Moser	*J. T. Gemmell*
C. J. Grant	*A. R. Thompson*
Geo. H. Banker	*F. W. Light*
H. J. Regan	*J. N. Ames*
Daniel Murphy	*T. J. Cullen*
H. T. Kelley	*G. W. McCallum*
J. W. McEachren	*J. A. Smith*
H. T. McLeod	*A. Nordahl*
M. Toner	*Charles Gordon*
John Skelly	*J. LaFramboise*
E. H. Learned	*Geo. B. Kendall*
Wm. Dornbrook	*C. R. Thrasher*
A. W. Armson	*H. M. White*
S. W. Armstrong	*H. M. Saveland*
H. F. Schroeder	*George A. Bell*
C. L. Barnhart	*Henry Walper*
Joseph Hasler	*Geo. Holdridge*
M. F. Sweeney	*A. W. Burrows*
J. F. Walsh	*C. G. Ennes*
E. M. Smith	*R. H. Richmond*
Chas. Weitzman	*H. B. Moore*
H. A. Shaw	*L. Haggan*
H. D. Wood	*F. C. Lapesh*
David Bouille	*W. G. Staley*
A. J. Talbot	*W. O. Stebbins*
A. Collins	*George Arnold*
A. C. Hansen	*Fred Warning*
J. Nahrstedt	*H. Edmondson*
A. R. Robinson	*L. O. Willix*
H. Culp	*L. L. Vradenburg*
E. L. Sawyer	*T. F. Higgins*
Wm. Millikin	*John Mraz*
H. W. McEwen	*A. D. Birdsall*
James A. Walsh	*R. W. Townsend*
G. H. Bowen	*H. E. McIntosh*
George Reece	*Wm. P. Diamond*
J. H. Denner	*Wm. E. Culp*
P. H. Dunn	*E. J. Rae*
John A. Ferguson	*F. Limpert*
H. J. Clegg	*A. L. Eggert*
E. F. Bernard	*Thos. Treleaven*
George G. Burt	*W. B. Danforth*
F. D. Selee	*Adam C. Lowe*
George Young	*C. E. Lawrence*
C. A. Fletcher	*John B. Woods*
Frank Schwartz	*H. Grotemat*
Bernard Henry	*Geo. Schroeder*
Wm. D. Killett	*J. W. Miller*
L. L. Hineline	*W. W. Densmore*
John W. Clark	*George H. Barth*
Floyd E. Lyons	*F. Thurman*
J. H. McGlenn	*W. C. McDougall*
H. M. Lubahn	*C. A. Suttle*
Wm. A. Lewis	*J. D. Walker*
H. N. Armstrong	*F. A. Smith*
O. Coder	*Wm. Bourlier*

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

way, throwing the propeller out of the water, there is quite a difference in the different engineer's ways of handling their engines. Some of them watch their throttling very closely, shutting off the throttle as the wheel comes out of the water and the engine begins to speed up, and giving her full throttle again as soon as the wheel has become submerged, and in that way men who have given it special attention, keep their engine running almost at a uniform speed; while with others, I have noticed that they simply check their engine down in a seaway and do very little throttling, claiming that they make just about the same time. This has not been borne out in practice in any of the experiments that I have seen tried out. It has been my observation that those who watch the throttling very closely, make better time in a head sea and do it with considerable less strain on the engine as well as on the ship, and it occurs to me that this would be a very important matter for our older engineers to bring to the attention of the young men who are coming up in the business so fast; in fact, the handling of the engine is one of the things that I have noticed our young engineers are not as proficient in as the men who have been in the business for a long period of time."

A. F. Harvey, assistant general manager, read the more important accidents during the year with the comment of the arbitrators upon each one. Mr. Coulby again called for the experiences of the masters in the use of storm oil in heavy weather, with especial relationship to those that were out in the November storm. There was very generous testimony along this line by a number of the masters. Captain Parks said that he had been a constant user of it for years, saying that it gives the propeller better water to work in, eases the ship and adds to her headway. He added that the engineer could always tell when oil is being used without being directly informed from the effect that it has on the engines.

The testimony of the masters was so convincing that Mr. Coulby ruled that before they went out in the spring a 25-gallon tank should be installed on every vessel, with a garden hose attached.

"In fact", said he, "I would prefer that you had two tanks. See that you have plenty of oil aboard at all times and we won't kick on the expense."

The question will also be taken up with the government of liberating oil from the government piers at Duluth in heavy weather when the current is going seaward.

Mr. Coulby acted as toastmaster at the annual dinner. He said that the incidents of the year upon which he looked back with greatest pleasure were the aid given by the steamer Stephenson to the crew of the stranded steamer Waldo, in the great November gale, and to the rescue of the crew of the sunken steamer City of London from the small boats by the Briton, showing the efficiency of the Briton's lookout, as several steamers had passed the small boats without seeing them. Mr. Coulby also expressed his gratification at the fine feeling of comradeship which pervades the whole organization.

James H. Hoyt, who is practically unrivalled as an after-dinner speaker, related a number of choice stories with wonderful embroidery and embellishment, making them as entertaining as a one-act play.

Hermon A. Kelley, in a brief address, followed very largely upon his talk at the business meetings.

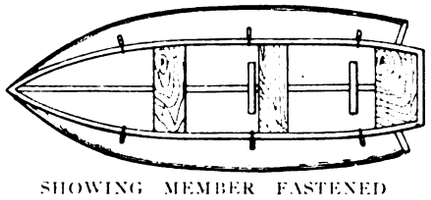
Thomas Owens, dock manager at Two Harbors, made an interesting point when he said that he was the engineer of the locomotive which drew the first trainload of ore from the Minnesota ranges. Since that time 120,000,000 tons have been shipped over the docks at Two Harbors.

Capt. Dennis Sullivan, of Chicago, read a resolution, which had been signed by every master and engineer of the Pittsburgh Steamship Co.'s fleet, deprecating the remarks of Judge Tuttle, of Detroit, on the practice of running in fog.

In closing, Mr. Coulby spoke a word in praise of Capt. John Lowe, to whom he outlined his policy when he first took charge of the affairs of the company ten years ago, and who gave him his earnest and undivided support for a number of years. The reply of Capt. Lowe, now on the pension list, was quite moving.

Preventing Boats from Capsizing

A. E. Wickman, Willmar, Minn., who has had considerable experience in sailing small craft, has patented a device, the purpose of which is to prevent the boat from capsizing in a heavy sea. Air compartments at each side usually prevent a small boat from sinking, but do not prevent capsizing. Mr. Wickman has invented a U-shaped member to be built in or attached to both port and starboard sides longitudinally and to be filled with air. The theory is that as the boat rolls the tank will exercise a lifting power returning it to an even keel.



SHOWING MEMBER FASTENED

Dake Steamer Steerers

The Dake Engine Co., Grand Haven, Mich., has issued a little catalog descriptive of their steam steering gears. The company makes a steam steering gear applicable for every tug and steamer and wants every vessel steered by hand to have one of its gears, and with this end in view have reduced prices as much as possible. Upon advice of size of tug or steamer, the company will send blue prints giving full details of suitable steering gear. The company furnishes chain enough to run over chain wheel and go down through sheaves to connect to side tiller rods or cable, also chain sheaves and lubricators.

Governmental aid for the lakes-to-gulf waterway project is recommended by Secretary of War Garrison in a communication to congress. The recommendation is in the form of a report from the board of army engineers. It asks the federal government to aid in improvements on the Illinois and Mississippi rivers provided the state of Illinois will pay a certain part of the cost. The report states that the waterway from Lockport, Ill., to the mouth of the Illinois river is favorable, and that a bottom width of 160 ft. in the canal and 200 ft. in the open river is sufficient for a channel 8 or 10 ft. deep. The locks, it says, should be 600 ft. long, 80 ft. wide and 11 ft. deep.

H. A. Rapelye has been appointed sales engineer of the Terry Steam Turbine Co., with offices at No. 2123 Oliver building, Pittsburgh. Mr. Rapelye has had broad experience with turbine apparatus and is qualified to take up in detail the various phases of turbine application.

A. C. Brown & Sons, of Tottenville, S. I., are building a wooden tug for the Arthur Ackerman Lighterage Co. of 59 Pearl street, New York, to be named the C. G. Ackerman. The machinery for the new vessel will be furnished by the John W. Sullivan Co., of New York.

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

THE MARINE REVIEW

DEVOTED TO MARINE ENGINEERING, SHIP BUILDING AND ALLIED INDUSTRIES

Published Monthly by

The Penton Publishing Company

Penton Building, Cleveland.

CHICAGO - - - - - - 1521-23 Lutton Bldg.
CINCINNATI - - - - - - 503 Mercantile Library Bldg.
NEW YORK - - - - - - - 503-4 West Street Bldg.
PITTSBURGH - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 501 Metropolitan Bank Bldg.
BIRMINGHAM, ENG. - - - - - Prince Chamber.

Subscription, $2 delivered free anywhere in the world.
Single copies, 20 cents. Back numbers over three months, 50 cents.

Change of advertising copy must reach this office on or before the first of each month.

The Cleveland News Co. will supply the trade with THE MARINE REVIEW through the regular channels of the American News Co.

European Agents, The International News Company, Breams Building, Chancery Lane, London, E. C., England.

Entered at the Post Office at Cleveland, Ohio, as Second Class Matter.

(Copyright 1914, by Penton Publishing Company)

April, 1914

Lifeboats Equipped with Wireless

Wireless is one of the greatest of all blessings to the mariner and it is constantly finding new uses. In a moderate sea the inevitable difficulties of launching boats may be more or less successfully met, but there is still a great danger to life when this has been accomplished, and the boats are afloat with their passengers and crew, for it is no easy matter to handle heavily laden boats in a seaway, and next to impossible to keep a number of them in close touch for any length of time when the sea is rough, and through hours of darkness. There is, therefore, a clear call for some efficient means of dealing with a fleet of boats under such conditions, and of keeping them together until help can arrive, for we may assume that any modern vessel will have ample opportunity to send out S. O. S. messages to the full limit of her wireless installation before the last necessity of taking to the boats is decided upon.

A new departure, which will do much to meet these requirements, was made on Saturday, March 14, when the Allan liner Alsatian sailed from Liverpool on her second voyage to Canada. She is equipped with a special lifeboat, which hangs from davits on her starboard quarter. It is not only a lifeboat, but is self-propelled, and, more important still, is fitted with a wireless telegraphic installation, which has an effective range of 100 miles. This lifeboat was built on the Clyde. She is 28 ft. long, and has a beam of 8 ft.; her hull is compactly and staunchly constructed to stand heavy wear and tear. She was put through a series of tests in a moderate gale about two weeks ago with satisfactory results. Her motive power is a four-cylinder paraffin motor of a well known and well tried type, the *sine qua non* of the machinery being, as it is of the hull, the maximum of reliability possible. The boat attained a speed of nearly seven and one-half knots on trial, and is calculated to have sufficient power to keep in effective control, under tow and in a moderate seaway, a string of ten ordinary boats loaded with passengers. Two similar boats are to be fitted to the Aquitania, and it seems likely that the practice will become general. If the scheme works out as is anticipated, and there seems no reason to doubt that it will do so, it is apparent that the chances of safety for passengers who have been driven by force of circumstances to take to the high seas in small boats will be very much enhanced. They will no longer be helpless castaways, but will have the tremendous advantages of mobility and companionship. It is almost unnecessary to point out that, whereas each isolated boat would have to make her own signals of distress, a group of boats would all be served as effectively by one signal, such as the ordinary rocket signal, and this alone makes the time during which such signals are available very much longer. There are other obvious advantages from grouping the boats, but the one great novel advantage is that derived from the possession of a wireless installation with a range of a hundred miles. It needs no great stretch of imagination to picture the difference between the position of a solitary and, perhaps, inadequately manned boat laboring in a seaway, and relying upon the chance of attracting the attention of some passing vessel, and that of a chain of eight or ten boats having motive power, and capable of making continuous calls for help to all ships carrying wireless installations within a 100-mile radius.

Running in Fog

It is quite natural that at the recent meeting of the Pittsburgh Steamship Co.'s officials with its captains and engineers attention should have been paid to the recent comments of Judge Tuttle on lake navigation. There is no doubt, as Hermon A. Kelley very well said, that the utterance of the court came as a distinct surprise. If there is one thing more than another that the leading companies on the lakes have emphasized during recent years it has been that of exercising care in fog. The captains are told over and over again that the safety of the ship is their first consideration and that weather conditions must govern the operation of the ship. Dispatch is secondary to safety. The vessels of the leading fleets are not driven at top speed through fog. There is not a ship that does not run under check in thick weather.

It is obviously impossible to define what moderate speed in fog may be. No court will undertake to define it, because moderate speed is governed by a

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

variety of conditions. What would be moderate speed in one instance might be reckless speed in another instance. Owners expect their masters to exercise the utmost caution and alertness in fog and to reduce speed to bare steerageway or stop altogether, upon hearing the fog whistle of another vessel apparently not more than four points from right ahead.

Panama Canal on Trade

The influence which the Panama canal is expected to have on Pacific ports has incited much optimism in the west, and has not failed to draw comment from the more conservative element. There is no doubt that it will be some time before the maximum benefits of the canal will accrue, and care should be taken not to create too great hopes for first results lest depression follow as a natural reaction. On the other hand, it is pleasing to note that capital has not been lacking for new harbor and dock work, which betokens widespread confidence as to the ultimate effect of the canal on Pacific coast traffic. Each port from Prince Rupert to San Diego has undertaken improvements, and the extension of railway lines to the coast, together with the terminal facilities involved, has brought the total development cost encouraged by the canal up to a figure considerably larger than the total amount expended on the canal itself. In fact, an impartial observer visiting the coast in the interests of the London *Times* places the cost of Pacific coast port work undertaken in preparation for the opening of the canal at about $500,000,000.

It is worth while to consider the extent of the improvements at the various ports. Aside from the harbor problems, the effect which these developments have on tributary resources is a matter of much interest. From the Pacific northwest, particularly, there come favorable reports of the extent to which the country is being opened up by the developments under way.

Grain production in three of the western provinces of Canada has increased during the past decade at the rate of 100 per cent in five years, and the railway companies admit that it has been impossible to extend their lines fast enough to keep abreast of the development. There is no doubt that the Panama canal has been a factor in spurring construction work on the western ends of the new transcontinental lines (even though the trade of the Orient has played a large part in the development), nor is the haste to be wondered at under the circumstances. The distance from Edmonton to Fort William, on Lake Superior, is 1,260 miles, while Edmonton grain can reach tidewater 735 miles away at Vancouver, or 825 miles over the Grand Trunk Pacific, which will have a maximum westbound grade of 0.5 of 1 per cent. Besides being an all-winter port, Vancouver's location should make it possible for one box car to take out twice as much grain a season by cutting the length of haul in half. But aside from considerations of this nature, any new grain outlet would be eagerly sought, because conditions have reached a point where the time element enters and the crop has to be rushed to tidewater. In recent seasons millions of bushels of Canadian wheat had to be shipped annually by rail from Buffalo to New York—a significant factor in the rush construction of the extensions through British Columbia.

There will soon be opportunity for most interesting comparative studies of the trade increase at the various Pacific coast ports and the extent to which preparatory development work has paved the way for it. Perhaps the most interesting situation, and the one, no doubt, which will take shape first, centers at Vancouver. The two new Canadian railroads to be completed next year should not only affect freight rates on territory already served, but should open up vast areas which hitherto have had no influence on commerce.

Panama Toll Repeal

President Wilson has forced through the house an act repealing the Panama toll exemption privilege to American domestic shipping, in defiance of his party's platform and against the wishes undoubtedly of a great majority of the whole people. The art, the conjuration, and the mighty magic whereby this was accomplished are all summed up in the one word patronage. But there is a day of reckoning coming. The United States has an undoubted right to pass its domestic shipping through the canal free, because it is non-competitive shipping and one in which no other nation may engage. In what manner it infringed upon the rights of any other nation cannot readily be conceived and it was clear from the early notices from Great Britain that they did not comprehend the limitations of the privilege. Earl Grey in his protest did not distinguish between domestic and foreign trade and was apparently confused on the subject.

In repealing this exemption from tolls, the United States legislates only against itself, because other nations can extend to their shipping a subsidy equivalent to the tolls, and Spain, in fact, has already done so. It would not be surprising if it worked out that American ships were the only ones that actually paid tolls for passing through the canal. It is very strange indeed that the United States should bear the whole burden of this great work and receive nothing in exchange for it. It will be many years before the tolls collected from shipping will pay the expense of maintaining the canal, and as for returning interest on investment, that is altogether out of the question.

The latest information from Panama is to the effect that the dredges are gradually overcoming the slides. There was doubt in many minds as to whether the substitution of dredges for steam shovels was wise, but apparently the wisdom of the move is borne out by the results.

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

A Test of Lundin Life Boats

By C. G. Davis

The development of the life boat has progressed through many stages up to the present day. Inventors, for the most part landsmen, who get their inspirations from crossing the Atlantic on a liner or purely from imaginary sea conditions, have flooded the patent office with plans of life boats and boat launching devices ranging all the way from the practical to the ridiculous.

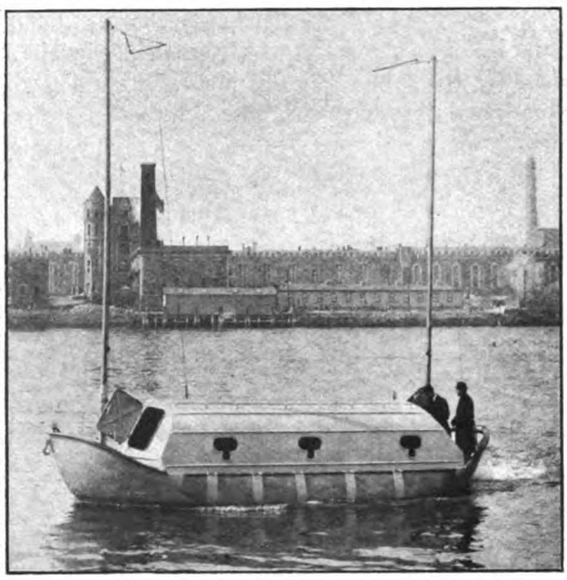
Nearly all of them have taken the sharp pointed double ended whale boat or dory model as the basis for their boat's shape. These boats were ideal when the total ship's complement consisted of about 30 men, for enough of these boats could be conveniently stowed to carry all hands without overloading them.

In those days, the days of the old sailing ships, a wrecked ship's crew might go for weeks and not be sighted by a passing ship and it was necessary to so model these boats that they could be either rowed or sailed to some land. But today the conditions are far different and the men who best realize this are the men who use the sea.

Even our trolley cars have had to be remodeled with side door or pay-as-you-enter platforms to carry the crowds that use them. Trans-Atlantic liners have produced similar conditions on the sea and the thousands of souls that are now carried in one big liner call for a radical departure in the small boat, or life boat equipment of the ship.

It is a curious fact that a practical sailor—a ship captain with years of experience in all types of ships, should be the first man to depart from old sea traditions, discard the distorted sharp-ended life boats and design a blunt-ended, almost flat-bottomed, life boat, so shaped that were she to be turned end over end—a condition impossible owing to her excessive stability—she would always turn right side up.

A practical test of this was made on Friday, March 13, 1914, at the dock of the Welin Marine Equipment Co., Long Island City, builders of these boats, before Gen. Geo. Uhler, supervising inspector general of the steamboat inspection service, and eight members of the board of supervising inspectors from the great lakes, west coast and gulf districts.



THE 30-FT. LUNDIN HOUSED POWER LIFEBOAT

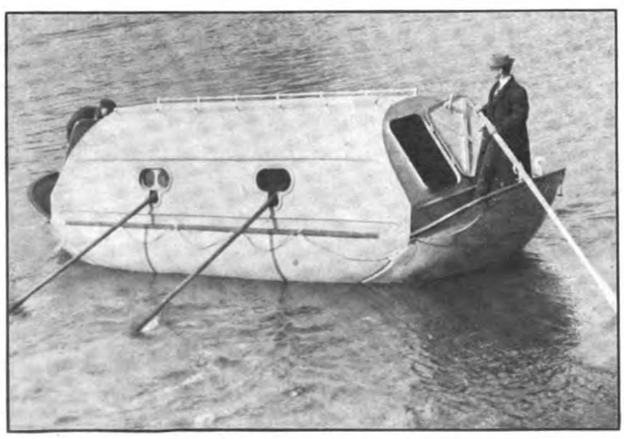
The test occupied two days, Friday being given up to a practical test of the entire Lundin life boat system. The first test was that of a 30-ft. x 10-ft. Lundin decked life boat, equipped with a 24-H. P. four-cylinder Standard motor enclosed in a metal compartment, the top of which forms a seat. This motor with a propeller working in a tunnel in the boat's bottom, which does not extend below the hull, drives the boat six knots an hour. Her motor is belted to a dynamo and enables her Marconi wireless outfit, installed in a Balsa wood "silence calm" in the forward starboard end of her metal cabin, to send messages a distance of 50 miles in the day time, 75 miles at night and to receive the messages at a much greater distance.

This boat was loaded with 50 men whose weight only increased the boat's stability. Seventeen more men stood on the wide wooden guard above her Balsa wood side fenders and her freeboard on the lee side thus loaded, as measured by David A. Heyser, clerk of the board, was 2 in.

After this test the boat proceeded down the East river and arrived at the Marine Basin, Bensonhurst, to be in readiness to proceed to sea for the test on the following day, in two hours.

The second test was that of a 24-ft. by 8-ft. Lundin housed-in lifeboat. After being lowered into the water, lines were passed around her, attached to an electric crane and the boat "parbuckled" upside down. She righted herself instantly and upon opening her doors and port lights not a drop of water was found inside; 40 men then got into her and she was rowed up and down the East river with its swift tide running.

The third test was that of the regular Lundin decked life boats now carried by many of the steamships. Two of them are kept stowed, nested one on top of the other, on the edge of the company's dock under a pair of Welin quadrant davits with all equipment of the regular Lundin system, such as tilting chocks and gripe release gear, Mill's releasing gear, nontoppling blocks and falls of the Lundin davit rope, rope so treated that it remain soft and pliable as it cannot



THE 24-FT. LUNDIN HOUSED LIFEBOAT

COMPLETE LUNDIN SYSTEM IN OPERATION

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

rot or deteriorate.

Sixty-one men climbed into this boat as it hung on the davits. In fifty-five seconds this boat was swung out to the full reach of the davit, the gripes all released and the lower boat tilted ready to be lowered, and it only required one man operating the crank at each end to do this.

The actual time of lowering from the time the last man was in until the boat was afloat released from her davit falls was about one minute and fifty seconds. This could not be actually timed, as when the boat was swung out it was kept so while the inspectors carefully examined all the gear before the boat was lowered.

The last test was of a 24-ft. Lundin open life boat with Balsa wood fenders, an improvement over the ordinary lifeboat in that she was a fuller bodied boat, carrying her load of 40 men with considerable more freeboard and she was easier to row and steer than the older type of boat.

On Saturday the power lifeboat with a crew of 17 fishermen besides her engineer, wireless operator, two sailors and myself left the yacht basin in Gravesend bay at 8:45 a. m., passed Norton's Point at 9 and stood out to sea for Sandy Hook lightship. Communications by wireless were kept up between the Sea Gate Marconi station, the Sandy Hook steam pilot boat out at sea and the tug boat M. Moran, then lying at Pier "A", North river, where Capt. Lundin, Gen. Uhler, the inspectors and several lake captains who had come on to see these tests were getting aboard.

Straight as a Die

The outer channel buoys were passed in just two hours from Norton's Point. The tug was then coming full speed down Ambrose channel with a 28-ft. Lundin decked lifeboat and a 24-ft. Lundin open boat in tow. The tug under full steam was logging 12 to 13 knots, but the boats trailed behind and towed straight as a die.

Near the lightship the tug stopped, all three boats came alongside, the fishermen were divided into crews and all the boats manned and put through all the maneuvers the inspectors could think of, from riding to sea anchors, to all being taken in tow by the power lifeboat and towed around the tug while cameras and moving picture machines recorded their every movement.

While these tests were in progress the steamship Berlin, outward bound with Mrs. Lundin aboard, was signalled by the lifeboat's wireless and the first wireless ever sent a steamship by a power lifeboat was a message of bon-voyage from Capt. Lundin to his wife.

The Lundin life boats were given a practical test in Cleveland at Upson-Walton Co.'s dock for the benefit of the Pittsburgh Steamship Co.'s masters and engineers. The attendance was quite liberal and the tests, which were practically a repetition of those performed in the east, were very satisfactory.

Naval Extravagance

THE MARINE REVIEW has on various occasions called attention to the excessive and unjustifiable cost of work in naval establishments. In spite of the showing, however, congress continues to provide funds with a lavish hand for the spending by a set of amateurs and incompetents. Herewith we give some comparative figures of cost of navy-built and contract-built fleet colliers.

The Jupiter, built at the Mare Island navy yard, was originally authorized in 1908 and there was appropriated for her construction $1,800,000.

The disclosures by various journals, led by THE MARINE REVIEW, of the miserable inefficiency and extravagance of the department in connection with the Vestal and Prometheus and the vastly better and less costly contract-built colliers, Hector, Vulcan and Mars, led to a reduction of this appropriation to $900,000, which, on the admission of the department of its inability to compete with contract costs, was increased to $1,000,000 in 1910, and again to $1,200,000 in 1911, and construction was finally begun in that year.

The same act which increased the appropriation for the Jupiter to $1,000,000 provided for two contract-built colliers at the same limit of cost and Proteus and Nereus were ordered of the Newport News Ship Building & Dry Dock Co., at $990,000 each, just inside the appropriation. It is, of course, an open secret that private yards will not, and do not, make low figures on naval work, especially when the volume of commercial work is satisfactory, so that the above bid does not necessarily mean the lowest possible.

But here are five ships of the same class, built to a standard classification used for commercial work, not to the usual naval specification and design as exemplified in the colossal failures Vestal and Prometheus, and yet the navy yard ship costs 30 per cent more than the average of the four privately-built ships. Nor is this all. As we have repeatedly pointed out, navy yard construction carries no overhead charges such as interest on investment, insurance, taxes, maintenance and upkeep, depreciation administration or profits. These charges vary with different lines of business, but if the proportion of sales usually applied in ship building establishments is added the cost will be found to exceed $1,500,000. Besides all this the delivery of privately-built ships was as much as a year ahead of time. The navy is on the job all the time when it comes to pulling the wool over the eyes of congress.

	Jupiter.	Proteus and Nereus.	Orion and 65 ft. 2½ in. Jason.
Builder.	Navy Yard Mare Island.	Newport News S. B. & D. D. Co.	Maryland Steel Co.
Length or L. W. L.	520 ft.	502 ft. 2 in.	514 ft.
Beam	65 ft. 3 in.	62 ft. 2½ in.	
Designed draught	27 ft. 6 in.	27 ft. 6 in.	27 ft. 4½ in.
Displacement, designed draught	19,230	19,080	19,130
Cargo capacity, tons (1)	12,500	12,500	12,500
Designed speed knots	14	14	14
Classification	U. S. Steamboat Inspection and Am. Bureau of Shipping	U. S. Steamboat Inspection and Am. Bureau of Shipping	U. S. Steamboat Inspection and Am. Bureau of Shipping
Trial speed, knots	14.7*	14.675	14.4
Cost	$1,271,986	$990,000	$951,000

(1) Includes bunker coal.
*Unofficial. From W. L. R. Emmet's paper read at Soc. N. A. & M. E.

New Dredger for Russia

Messrs. Wm. Simons & Co., Ltd., Renfrew, launched March 16, complete and ready for work the powerful twin-screw Simons cutter suction reclamation dredger No. 5, constructed to the order of the Russian government. The dredger is fitted with two sets of compound surface condensing engines each driving its own propeller. Steam is supplied by two steel multitubular boilers constructed to Bureau Veritas requirements for 160 lbs. working pressure. The dredging pump is driven by an independent set of triple-expansion surface condensing engines. The cutter is driven from a set of vertical compound engines through cast steel gearing of very massive construction. The suction frame is designed for dredging the vessel's own flotation and to a depth of 65 ft. below water level. The dredging and discharging capacity is 1,000 tons per hour. A complete electric light installation is provided throughout the vessel, and all cabins are heated by steam.

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Safety at Sea

A Condensation of the Proceedings of the Convention in So Far as They Affect Ship Builders

THE report of the International Convention on Safety of Life at Sea was published on Feb. 16 and is now accessible in pamphlet form. It occupies 64 pages of letter press and is printed in French and English. In Article I the contracting nations undertake to give effect to the provisions of the convention, to promulgate all regulations and to take all steps which may be necessary to give the convention full and complete effect.

Article II states that, except where otherwise provided, the merchant ships of any of the states of the high contracting parties, which are mechanically propelled, which carry more than 12 passengers and which proceed from a port of one of the said states to a port situated outside that state, or conversely, are subject to the provisions of this convention. Ports situated in the colonies, possessions or protectorates of the high contracting parties are considered to be ports outside the state. There are excepted from the convention, save in the cases where the convention otherwise provides, ships making voyages specified in a schedule to be communicated by each high contracting party to the British government at the time of ratifying the convention. No schedule may include voyages in the course of which the ships go more than 200 sea miles from the nearest coast.

Construction

Chapter IV deals with the construction of new and existing ships. New ships are those the keels of which are laid after July 1, 1915; other ships are considered as existing ships. Existing arrangements on the latter shall be considered by the administration of the state to which the ships belong, with a view to improvements providing increased safety where practicable and reasonable.

Ships are to be as efficiently subdivided as is possible having regard to the nature of the service for which they are intended. The requirements are such that the highest degree of safety corresponds with the ships of greatest length primarily engaged in the carriage of passengers The method to be followed in order to determine the permissible length of compartments on the basis of the floodable length, to prescribe a limit to the length of compartments, and to fix the conditions governing certain special cases, is as follows:

Definitions

The load water line is the water line used in determining the subdivision of the ship.

The length of the ship is the extreme length at the load water line.

The breadth of the ship is the extreme width from outside of frame to outside of frame at or below the load water line.

The bulkhead deck is the uppermost continuous deck to which all transverse water-tight bulkheads are carried.

The margin line is a line drawn parallel to the bulkhead deck at side line, and 3 in. below the upper surface of the deck at side.

The draught is the vertical distance from the top of keel amidships to the load water line.

The freeboard is the vertical distance from the load water line to the margin line amidships.

The depth of the ship is the sum of the draught and freeboard as above defined.

The sheer of the bulkhead deck at any point is the vertical distance between the beam at side line at that point and a line drawn parallel to the load water line at the height of the beam at side line amidships.

If block coefficient of fineness of displacement to load water line is used, this coefficient shall be determined as follows:

$$\frac{\text{Volume of displacement to molded lines.}}{\text{Length} \times \text{Breadth} \times \text{Draught.}}$$

The permeability of a space is the percentage of that space which can be occupied by water.

The volume of a compartment which extends above the margin line shall be measured only to the height of that line. Volumes shall be understood as volumes to molded lines.

The machinery space is to be taken as extending in length between the extreme main transverse watertight bulkheads bounding the spaces devoted to the main and auxiliary propelling machinery, including boilers when installed.

Article VI of the regulations states that the floodable length at any point of the length of a ship shall be determined taking into consideration form, draught and other limiting characteristics of the ship in question. This floodable length for a given point in a ship with a continuous bulkhead deck is the maximum percentage of the length of the ship (having its center at the point in question) which can be flooded, under the definite assumptions relating to the permeabilities of the spaces in question below the margin line, without the ship being submerged beyond the margin line. In the case of ships not having a continuous bulkhead deck, the floodable length must be such as to secure to the ship in question, for each portion of its length, and for all conditions of trim after damage, a measure of safety at least equal in effectiveness to that laid down for the ship with continuous bulkhead deck.

In determining the floodable length a uniform average permeability shall be used throughout the whole length of the machinery space, the portion forward of the machinery space, and the portion abaft the machinery space. For steamships the permeability of the machinery space, including the double bottom in wake thereof, shall be taken as 80 per cent. For ships fitted with internal-combustion engines the corresponding permeability shall be taken as 85 per cent, unless it is proved by actual calculation that a lower figure may be adopted, provided that in no case shall that figure be less than 80 per cent.

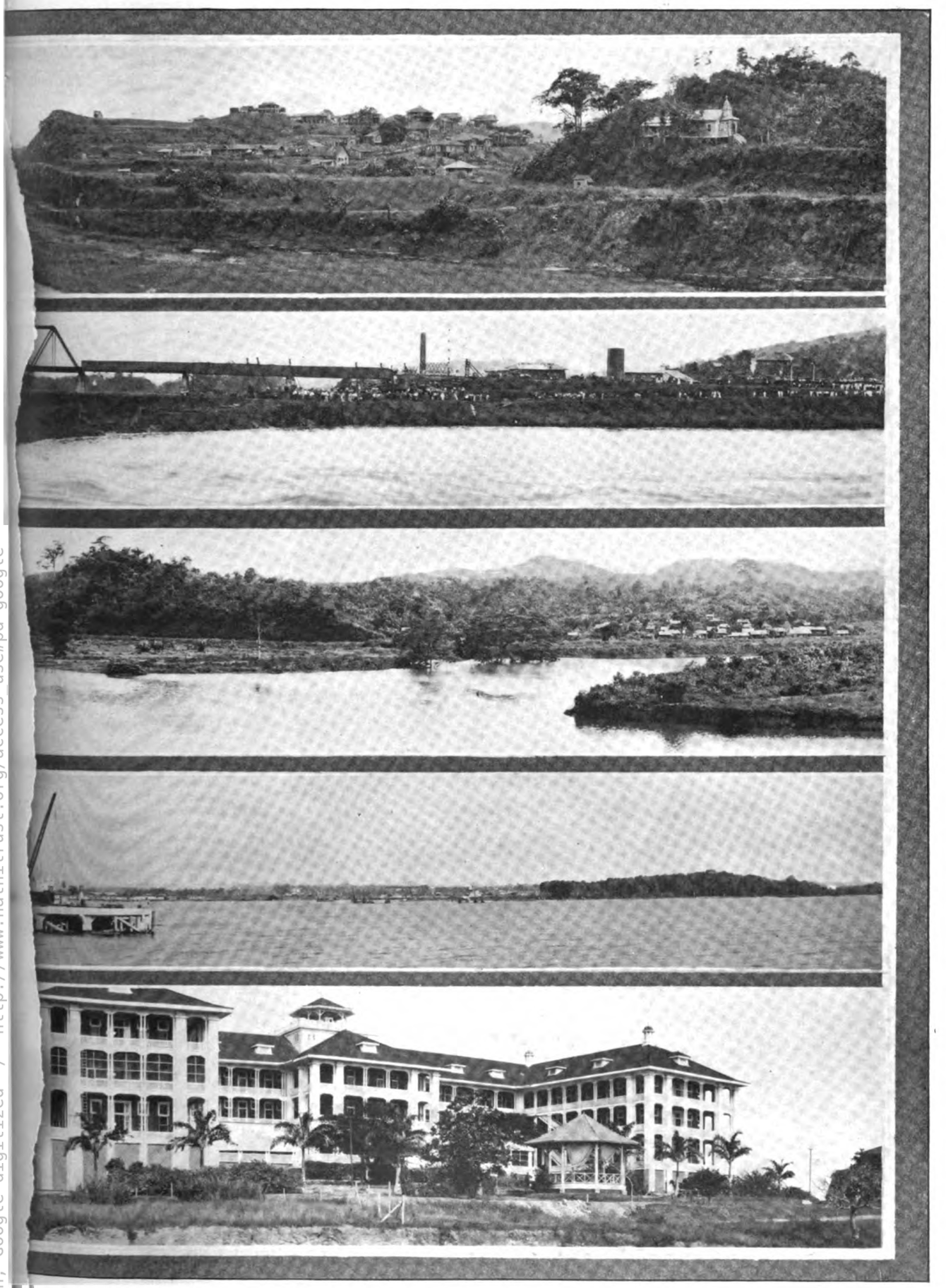
Permeability

The permeabilities for spaces forward and aft of the machinery space shall be as follows:

(a) Sixty per cent in cargo spaces, bunkers (permanent or reserve), storerooms, baggage and mail rooms, chain lockers, watertight shaft or pipe tunnels, and fresh water tanks above the double bottom. It must be proved that these spaces just enumerated are practicable for the purposes intended, and that they are to be so used. The same permeability shall not be assigned to any other space without the approval of the administration.

(b) Ninety-five per cent in passenger and crew spaces, peaks, trimming tanks exclusively so used, double bottoms, and all other spaces not specifically appropriated to one of the

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



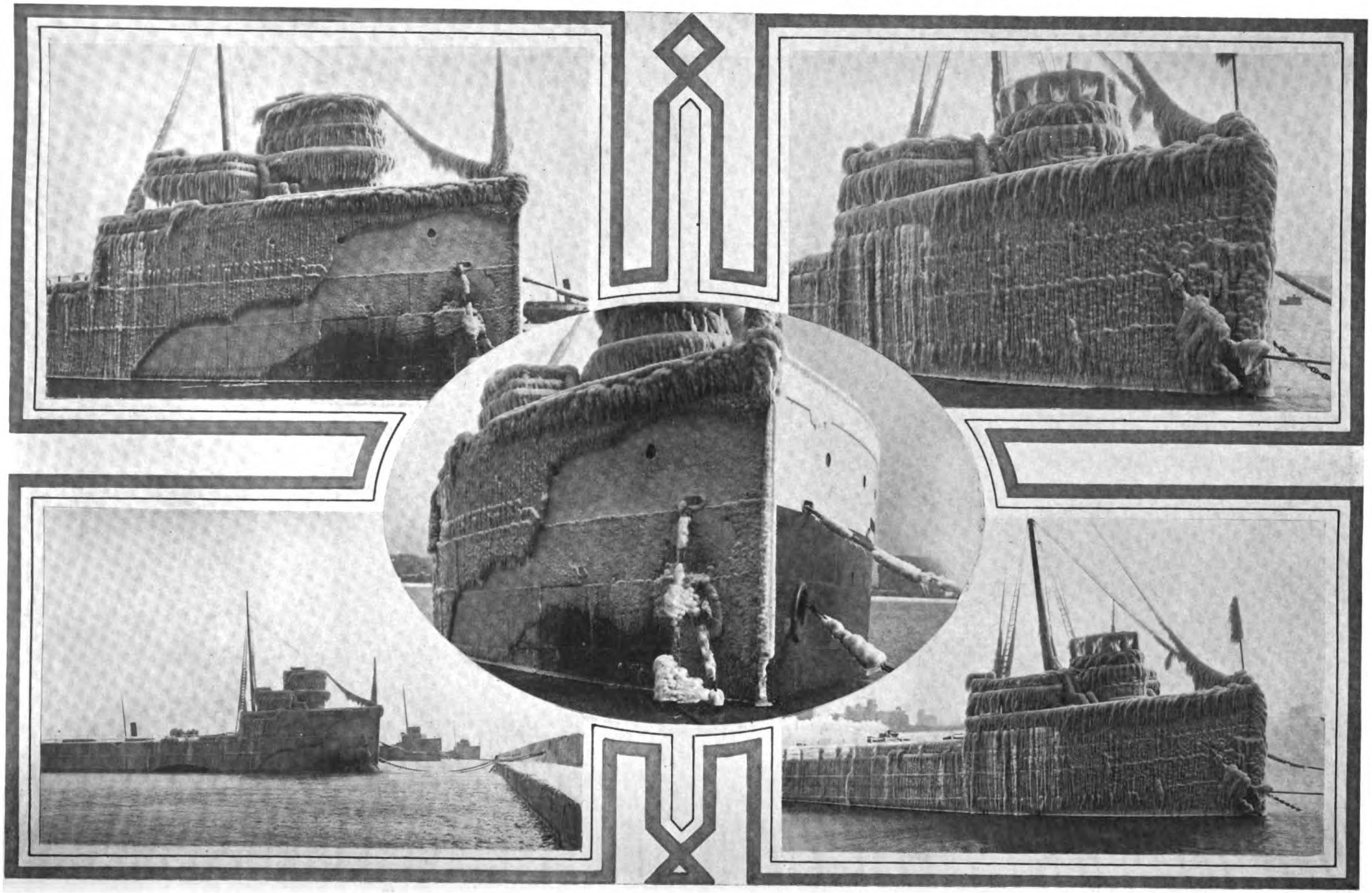
Gamboa Dike before Dynamiting, holding back the waters of
voli Hotel and Ancon Hill

Generated on 2024-07-27 01:52 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

The Grain Carrying Fleet Moored Under the Buffalo Breakwater



Original from UNIVERSITY OF MICHIGAN

purposes indicated in (a). If in a 'tween deck space enclosed by complete transverse permanent steel bulkheads any portion thereof is appropriated to passengers, the whole of that space shall be regarded as passenger space; and, similarly, 'tween deck spaces appropriated for the carriage of either passengers or cargo shall be regarded as passenger spaces.

Where the spaces before or abaft the machinery space below the margin line consist partly of spaces mentioned in section (a) and partly of spaces mentioned in section (b), the average percentage of permeability shall be determined separately for each end by the formula 95—35r, where r is the ratio between the volume of the spaces mentioned in section (a) and the total volume of the space in the portion of the ship under consideration.

Sub-Division

The permissible length of compartments is stated in Article VIII of the regulations. The maximum permissible length of one compartment having its center at any point in the ship's length is obtained from the floodable length by multiplying that length by an appropriate factor, called the factor of sub-division. This factor of sub-division depends on the length of the ship, and, for a given length, varies according to the nature of the service for which the ship is intended. The factor decreases in a regular and continuous manner—

(a) As the length of ship increases; and

(b) As for a given length, the ship departs from the type of ship engaged in a mixed cargo and passenger service, and approaches to the type of ship primarily engaged in the carriage of passengers.

For each of the two types of ships referred to in (b) the variation of the factor of sub-division may be expressed by a curve, of which the co-ordinates represent the length of the ship and the value of the factor. Table I gives certain points on two curves, the higher of which corresponds to the minimum requirements for the "mixed" type, and the lower to the minimum requirements for the "passenger" type.

TABLE I.

A	B		C	
	Metres.	Feet.	Metres.	Feet.
1.00	90	295	79	259
0.90	114	374	87	285
0.84	123	404	93	305
0.65	149	489	116	380
0.50	174	571	149	489
0.39	213	699	209	685
0.34	274	899	274	899

Column A gives the maximum permissible values of the factor of sub-division for the length of ships given in columns B and C. Column B is applicable to ships engaged in a mixed cargo and passenger service, and column C is applicable to ships primarily engaged in the carriage of passengers.

For a given length of value of a factor of sub-division appropriate to a ship between the two extreme limits will be between the values of the factors determined by the two curves mentioned above, and will be automatically fixed by a *criterion of service* which is to form the subject of further study. When the factor of sub-division is equal to or less than 5, it may be doubled in order to give at any point of the ship's length the total length of two adjacent compartments; but, in that case, the length of the shorter compartment of any pair shall not be less than one-quarter of the total length so obtained. If one of the two adjacent compartments is situated inside the machinery space and the second is situated outside the machinery space, and the average permeability of the portion of the ship in which the second is situated differs from 80 per cent, the length of the pair of compartments shall be adjusted to the proper value by applying a suitable correction. In no case whatever shall the length of any watertight compartment exceed 92 ft.

When the factor of sub-division applicable to any ship is less than 0.84, but more than 0.5, the combined length of the two foremost compartments shall not exceed the floodable length at the extreme forward end, provided also that the length of the second compartment is not greater than that permissible by Article VIII and not less than 10 ft. When the ship is more than 699 ft. long and less than 823 ft., the floodable length at the forward end of the ship shall be at least 20 per cent of the ship's length; and the ship, forward of a bulkhead placed either at the distance of the actual floodable length abaft the stem or not nearer to the stem than 20 per cent of the ship's length, shall be divided into at least three compartments. When the length of the ship is equal to or greater than 823 ft. the same method shall be adopted, but the floodable length shall be at least 28 per cent and the number of compartments at least four.

Bulkheads, Etc.

A bulkhead may be recessed transversely, provided the sides of the recess are at a sufficient distance from the sides of the ship. Vertical steps are inadmissible in the main transverse watertight bulkheads of ships to which the sub-division rules of Article VIII apply where the factor of sub-division is greater than 0.5, unless such arrangements are made by additional sub-division as shall maintain the same measure of safety as that secured by bulkheads without steps. The total length of the steps in any bulkhead shall not exceed 2 per cent of the ship's length, plus 10 ft. The existence of recesses or steps in a bulkhead shall in no case affect the permissible volumes of the compartments adjacent to such bulkhead.

Article XII of the regulations states that in the parts of a ship above the margin line there shall be fitted fireproof bulkheads which will serve to retard the spread of fire. The mean distance between any two consecutive bulkheads of this description shall not be greater than 131 ft. Recesses in these bulkheads shall be fireproof, and the openings in these bulkheads shall be fitted with fireproof doors.

Means of Escape

In passenger and crew spaces a practicable means of escape for the occupants shall be provided from each watertight compartment, and there shall be a means of escape for the crew from each engine room, shaft tunnel and stokehold compartment independent of the watertight doors.

In order to insure their strength and watertightness, watertight bulkheads shall be constructed and tested in accordance with the provisions of Article XIV of the regulations, which states:—

(1) Watertight bulkheads shall be constructed in such a manner that they shall be capable of supporting with a proper margin of resistance, the pressure due to a head of water up to the margin line.

(2) Steps and recesses in bulkheads shall be as watertight and as strong as the bulkhead at the place where each occurs.

Where frames or beams pass through a watertight deck or bulkhead, the watertightness shall be obtained by caulked angle chocks, or cast iron or steel chocks efficiently secured and rust-joined, and not by wood or cement.

(3) Testing main compartments by filling them with water is not compulsory. A complete examination of the bulkheads shall be made by a surveyor; and, in addition, a hose test shall be made in all cases.

(4) The foremost and aftermost compartments shall be tested with water to a head up to the margin line.

Double bottoms, deep tanks, and all compartments intended to hold liquids shall be tested with water to a head 8 feet above the top of the tank or

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

to the load water line, whichever is the greater.

(5) No change may be made in the structure of the bulkheads after the completion of the survey without the permission of the administration.

(6) All provisions relating to main transverse watertight bulkheads shall apply to longitudinal bulkheads, so far as is practicable.

The number of openings in watertight bulkheads shall be reduced to the minimum compatible with the design and proper working of the ship, and satisfactory means shall be provided for closing them. The conditions governing these openings are given in Article XV of the regulations.

Articles XVI and XVII of the regulations indicate the conditions under which openings may be made in the ship's side, the appliances which shall be provided for closing these openings, and the requirements as to operating the closing appliances. Side scuttles and other openings in the side of the ship and the inboard openings of discharges through the shell shall be provided with means of closing them, and shall be arranged in such a manner as to prevent so far as possible the accidental admission of water into the ship. Article XVII of the regulations provides that the design and the materials used in the construction of watertight doors, side scuttles, gangway, coaling and cargo ports, valves, pipes, ash and rubbish shoots shall be to the satisfaction of the administration; and further that watertight doors shall be tested by a water pressure equal to that prescribed for the bulkhead where the doors are located. The test shall be made before the vessel is put in service, and either before or after the door is fitted.

Watertight Decks

In order to insure their strength and watertightness, watertight decks, trunks, and ventilators shall be constructed and tested as provided by Article XVIII of the regulations, which states:—

(1) Watertight decks, trunks and ventilators shall be of the same strength as the watertight bulkhead at the place where they occur. The means used for making them watertight and the arrangements adopted for closing the openings in them shall be to the satisfaction of the administration. If watertight covers are used for closing these openings, they shall be fitted in place before the ship leaves port, and kept closed during navigation.

(2) After completion a hose or flooding test shall be applied to watertight decks and a hose test to watertight trunks. Watertight ventilators and trunks shall be carried at least up to the margin line.

(3) No change shall be made in the structure of watertight decks, trunks and ventilators after the survey without the permission of the administration.

Double Bottoms

Article XXI of the regulations describes the conditions under which a double bottom shall be fitted in ships of different lengths, and in particular the minimum extent of the double bottom longitudinally and transversely. These conditions are:—

(1) In ships from 200 ft. to 249 ft. in length, a double bottom shall be fitted at least from the machinery space to the forepeak bulkhead, or as near thereto as practicable.

(2) In ships from 249 ft. in length and under 300 ft. in length, a double bottom shall be fitted at least outside of the machinery space, and shall extend to the fore and after-peak bulkheads respectively, or as near thereto as practicable.

(3) In ships 300 ft. and over in length, a double bottom shall be fitted amidships, and shall extend to the fore and after-peak bulkheads respectively, or as near thereto as practicable.

(4) In ships over 300 ft. in length, the inner bottom shall be continued out to the ship's side in such a manner as to protect the bilges.

(5) In ships over 699 ft. in length, the double bottom, for at least half the ship's length amidships and forward to the forepeak bulkhead, shall extend up the ship's sides to a height above the top of the keel not less than 10 per cent of the ship's molded breadth.

(6) Wells constructed in the double bottom in connection with the drainage arrangements shall not extend downwards from the inner bottom more than half the depth of the double bottom at that point. A well extending to the outer skin is, however, permitted at the after end of the shaft tunnels of screw ships.

Propulsion

Ships shall have sufficient power for going astern to secure proper control of the ship in all circumstances (Article XXII), and shall be provided with an auxiliary steering apparatus, which, however, may be of less power than the main apparatus, and need not be worked by steam or other mechanical power (Article XXIII).

Every ship shall be subjected at least to the following surveys:—

(a) A survey before the ship is put in service;

(b) Periodical surveys, once each year;

(c) Additional surveys, as occasion arises.

Article XXV states that the survey before the ship is put in service shall include a complete inspection of the hull, machinery, life-saving appliances, and other equipments, including the outside of the ship's bottom, and the inside and outside of the boilers. The survey shall be in all respects such as to secure that, from the point of view of safety of life at sea, the ship is fit for the service for which it is intended.

All merchant ships, whether they are propelled by machinery or by sails, and whether they carry passengers or not, shall, when engaged on the voyages specified in Article II of the convention, be fitted with a radiotelegraph installation, if they have on board fifty or more persons in all.

Life-Saving Appliances, Etc.

Chapter VI deals with life-saving appliances and fire protection. For the application of the articles contained in this chapter and of the corresponding part of the regulations the ships subject to the provisions of the convention are divided into new ships and existing ships. New ships are those of which the keel is laid after Dec. 31, 1914, and other ships are considered as existing ships. The fundamental principle of Article XL of the convention states that at no moment of its voyage may a ship have on board a total number of persons greater than that for which accommodation is provided in the lifeboats and on the pontoon life-rafts on board. The number and arrangement of the boats, and (where they are allowed) of the pontoon-rafts, on a ship depends upon the total number of persons which the ship is intended to carry, provided that there shall not be required on any voyage a total capacity in boats, and (where allowed) pontoon-rafts, greater than that necessary to accommodate all the persons on board.

All the lifeboats allowed for the ship shall comply with the conditions fixed by the convention and the regulations.

The standard types of boats are classified in Article XXVII of the regulations as follows:

Class I (entirely rigid sides):—

Section.	Type.
A Open.	Internal buoyancy only.
B Open.	Internal and external buoyancy.
C Pontoon.	Well deck; fixed watertight bulwarks.

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Class II (partially collapsible sides):

A Open. Upper part of sides collapsible.

B Pontoon. Well deck; collapsible watertight bulwarks.

C Pontoon. Flush deck; collapsible watertight bulwarks.

Motor boats may be accepted if they comply with the requirements laid down for boats of the first class, but only to a limited number, which number shall be determined by each government in its own regulations.

No boat may be approved the buoyancy of which depends upon the previous adjustment of one of the principal parts of the hull, or which has not a cubic capacity of at least 125 cubic feet.

The standard types of boats of the first class (Article XXVIII of the regulations) must satisfy the following conditions:—

1A. Open boats with internal buoyancy only.

The buoyancy of a wooden boat of this type shall be provided by watertight air-cases, the total volume of which shall be at least equal to one-tenth of the cubic capacity of the boat.

The buoyancy of a metal boat of this type shall not be less than that required above for a wooden boat of the same cubic capacity, the volume of watertight air-cases being increased accordingly.

1B. Open boats with internal and

External Buoyancy

The internal buoyancy of a wooden boat of this type shall be provided by watertight air-cases, the total volume of which is at least equal to 7½ per cent of the cubic capacity of the boat.

The external buoyancy may be of cork or of any other equally efficient material, but such buoyancy shall not be secured by the use of rushes, cork shavings, loose granulated cork or any other loose granulated substance, or by any means dependent upon inflation by air.

If the buoyancy is of cork, its volume, for a wooden boat, shall not be less than thirty-three thousandths of the cubic capacity of the boat; if of any material other than cork, its volume and distribution shall be such that the buoyancy and stability of the boat are not less than that of a similar boat provided with buoyancy of cork.

The buoyancy of a metal boat shall be not less than that required above for a wooden boat of the same cubic capacity, the volume of the air-cases and external buoyancy being increased accordingly.

1C. Pontoon boats, in which persons cannot be accommodated below the deck, having a well deck and fixed watertight bulwarks.

The area of the well deck of a boat of this type shall be at last 30 per cent of the total deck area. The height of the well deck above the water line at all points shall be at least equal to one-half per cent of the length of the boat, this height being increased to 1½ per cent of the length of the boat at the ends of the well.

The freeboard of a boat of this type shall be such as to provide for a reserve buoyancy of at least 35 per cent.

The standard types of boats of the second class (Article XXIX of the regulations) must satisfy the following conditions:

2A. Open boats having the upper part of the sides collapsible.

A boat of this type shall be fitted both with watertight air-cases and with external buoyancy, the volume of which, for each person which the boat is able to accommodate, shall be at least equal to the following amounts:

	Cu. ft.
Air cases	1.5
External buoyancy (if of cork)	0.2

The minimum freeboard of boats of this type is fixed in relation to their length; it is measured vertically to the top of the solid hull at the side amidships, from the water level when the boat is loaded.

The freeboard in fresh water shall not be less than the following amounts:—

	Min. freeboard.
Length of boat..26 ft.	8 in.
Length of boat..28 ft.	9 in.
Length of boat..30 ft.	10 in.

2B. Pontoon boats having a well deck and collapsible bulwarks.

All the conditions laid down for boats of type 1C are to be applied to boats of this type, which differs from those of type 1C only in regard to the bulwarks.

2C. Pontoon boats, in which the persons cannot be accommodated below deck, having a flush deck and collapsible bulwarks.

The minimum freeboard of boats of this type is independent of their length and depends only upon their depth. The depth of the boat is to be measured vertically from the underside of the garboard strake to the top of the deck at the side amidships, and the freeboard is to be measured from the top of the deck at the side amidships to the water level when the boat is loaded.

The freeboard in fresh water shall not be less than the following amounts, which are applicable without correction to boats having a mean sheer equal to 3 per cent of their length:

	Min. freeboard.
Depth of boat...12 in.	2¼ in.
Depth of boat...18 in.	3¾ in.
Depth of boat...24 in.	5⅛ in.
Depth of boat...30 in.	6½ in.

If the sheer is less than the standard sheer defined above, the minimum freeboard is obtained by adding to the figures in the table one-seventh of the difference between the standard sheer and the actual mean sheer measured at the stem and stern post; no deduction is to be made from the freeboard on account of the sheer being greater than the standard sheer or on account of the camber of the deck.

Must Be Safely Lowered

Each boat must be of sufficient strength to enable it to be safely lowered into the water when loaded with its full complement of persons and equipment. Any type of boat may be accepted as equivalent to a boat of one of the prescribed classes, and any type of raft as equivalent to an approved pontoon-raft, if such types satisfy the administration concerned. When motor boats are accepted the volume of internal buoyancy, and, when fitted, the external buoyancy, must be fixed, having regard to the difference between the weight of the motor and its accessories and the weight of the additional persons which the boat could accommodate if the motor and its accessories were removed. All pontoon lifeboats shall be fitted with efficient means for quickly clearing the deck of water. The orifices for this purpose shall be such that the water cannot enter the boat through them when they are intermittently submerged. The number and size of the orifices shall be determined for each type of boat by a special test. For the purpose of this test the pontoon boat shall be loaded with a weight of iron equal to that of its complement of persons and equipment. In the case of a boat 28 ft. long two tons of water shall be cleared from the boat in a time not exceeding 60 seconds for boats of type 1C, 60 seconds for type 2B, and 20 seconds for type 2C. Boats of other lengths than 28 ft. shall be cleared in a proportionate time.

Article XXXIII of the regulations states that no type of pontoon raft may be approved unless it satisfies the following conditions:—

1. It should be reversible and fitted with bulwarks of wood, canvas or other suitable material on both sides. These bulwarks may be collapsible.

2. It should be of such size,

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

strength and weight that it can be handled without mechanical appliances, and, if necessary, be thrown from the vessel's deck.

3. It should have not less than 85 cubic decimeters (equivalent to 3 cu. ft.) of air-cases or equivalent buoyancy for each person whom it can accommodate.

4. It should have a deck area of not less than 3,720 square centimeters (equivalent to 4 sq. ft.) for each person whom it can accommodate, and the platform should not be less than 15 centimeters (equivalent to 6 in.) above the water level when the raft is loaded.

5. The air-cases or equivalent buoyancy should be placed as near as possible to the sides of the raft.

All the boats and rafts must be stowed in such a way that they can be launched in the shortest possible time and that, even under unfavorable conditions of list and trim from the point of view of the handling of the boats and rafts, it may be possible to embark in them as large a number of persons as possible.

The davits shall be of such strength that the boats can be lowered with their full complement of persons and equipment, the ship being assumed to have a list of 15 degrees. The davits must be fitted with a gear of sufficient power to insure that the boat can be turned out against the maximum list under which the lowering of the boats is possible on the vessel in question.

In Article XLIII, Table II fixes, according to the length of the ship:

(A) The minimum number of sets of davits to be provided, to each of which must be attached a boat of the first class.

(B) The minimum total number of open boats of the first class, which must be attached to davits.

(C) The minimum boat capacity required, including the boats attached to davits and the additional boats.

Article XLIX of the regulations states that every ship shall be provided with powerful pumps operated by steam or other means. On ships of less than 4,000 tons, there shall be two, and on larger ships three of these pumps. The pumps shall be capable of delivering a sufficient quantity of water in two powerful jets simultaneously in any given part of the vessel, and shall be available for immediate use before the vessel leaves port. The service pipes shall permit of two powerful jets of water being simultaneously directed on any given part of deck occupied by passengers and crew, when the watertight and fireproof doors are closed. The service pipes and hoses shall be of ample size and made of suitable material. The branches of the pipes shall be so placed on each deck that the fire hose can be easily coupled to them.

Provision shall be made whereby both two powerful jets of water and a sufficient supply of steam may be conveyed to every space filled with cargo. Provision for the supply of steam need not be required in ships of less than 1,000 tons. A sufficient number of portable fluid fire extinguishers, or those of other efficient types, shall be provided, at least two being carried in each machinery space. Two equipments, consisting of a smoke helmet and a safety lamp, shall be carried on board and kept in two different places. All the fire extinguishing appliances shall be thoroughly examined at least once a year by a surveyor appointed by the government.

TABLE II.

Registered Length of the Ship. Metres.	Feet.	(A) Min. No. of sets of davits.	(B) Min. No. of open boats of the first class.	(C) Minimum capacity of lifeboats. Cubic metres.	Cubic feet.
31 and under 37	100 and under 120	2	2	28	980
37 and under 43	120 and under 140	2	2	35	1,220
43 and under 49	140 and under 160	2	2	44	1,550
49 and under 53	160 and under 175	3	3	53	1,880
53 and under 58	175 and under 190	3	3	68	2,390
58 and under 63	190 and under 205	4	4	78	2,740
63 and under 67	205 and under 220	4	4	94	3,330
67 and under 70	220 and under 230	5	4	110	3,900
70 and under 75	230 and under 245	5	4	129	4,560
75 and under 78	245 and under 255	6	5	144	5,100
78 and under 82	255 and under 270	6	5	160	5,640
82 and under 87	270 and under 285	7	5	175	6,190
87 and under 91	285 and under 300	7	5	196	6,930
91 and under 96	300 and under 315	8	6	214	7,550
96 and under 101	315 and under 330	8	6	235	8,290
101 and under 107	330 and under 350	9	7	255	9,000
107 and under 113	350 and under 370	9	7	273	9,630
113 and under 119	370 and under 390	10	7	301	10,650
119 and under 125	390 and under 410	10	7	331	11,700
125 and under 133	410 and under 435	12	9	370	13,060
133 and under 140	435 and under 460	12	9	408	14,430
140 and under 149	460 and under 490	14	10	451	15,920
149 and under 159	490 and under 520	14	10	490	17,310
159 and under 168	520 and under 550	16	12	530	18,720
168 and under 177	550 and under 580	16	12	576	20,350
177 and under 186	580 and under 610	18	13	620	21,900
186 and under 195	610 and under 640	18	13	671	23,700
195 and under 204	640 and under 670	20	14	717	25,350
204 and under 213	670 and under 700	20	14	766	27,050
213 and under 223	700 and under 730	22	15	808	28,560
223 and under 232	730 and under 760	22	15	854	30,180
232 and under 241	760 and under 790	24	17	908	32,100
241 and under 250	790 and under 820	24	17	972	34,350
250 and under 261	820 and under 855	26	18	1,031	36,450
261 and under 271	855 and under 890	26	18	1,097	38,750
271 and under 282	890 and under 925	28	19	1,160	41,000
282 and under 293	925 and under 960	28	19	1 242	43,880
293 and under 303	960 and under 995	30	20	1,312	46,350
303 and under 314	995 and under 1,030	30	20	1,380	48,750

General

The convention shall come into force on July 1, 1915, and shall remain in force without any prescribed limit of time. Any high contracting party may, however, denounce it at any time after an interval of five years. The convention shall be ratified not later than Dec. 31, 1914, and the convention may be modified at subsequent conferences of which the first shall be held, if necessary, in 1920.

The foregoing abstract of the convention has been prepared with a view to give, as far as possible, a summary of all points affecting ship builders.

McArthur Jacob's Ladder

The McArthur Jacobs' ladder, which is proving itself quite useful aboard lake ships, has been considerably improved of late. It is now made in sections of any desired length, doing away with the telescopic feature of the earlier type. These sections can be joined together by snap hooks instantly, adapting the length to light or loaded trim of vessel. The popular type is of three sections, 13, 8 and 6 ft. long, making a total length of 27 ft. and a variety of shorter combinations. The ladder is constructed of plow steel with aluminum steps. It is light in weight but very strong, and by means of the new two-tooth prongs gives a very firm footing. When not in use it can be rolled up, occupying very little space. Capt. Charles A. Benham, of the steamer John Stanton, Capt. Edward Fitch, of the steamer Utley, and Capt. B. M. Landfair, of the steamer La Belle, used the ladders last season and recommend them highly.

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Machine Spun Oakum

The George Stratford Oakum Co., Jersey City, N. J., recently sent out to a number of ship yards along the Atlantic seaboard and great lakes, where replies could be had quickly, the following questions:

First.—As to the cost of spinning Carded Best Oakum by hand.

Second.—The usual amount of waste these yards found in such spinning.

Third.—As to the comparative economy of using Machine Spun Oakum as compared with the carded oakum.

The replies have been very interesting and the company feels that it should make this public without giving the names of the yards who gave the information.

In answer to the first question, as to the cost of spinning oakum by hand, six replied that it cost 2c per lb., five 2½c, five 3c, three 3½c, one 4½c, one 5c, one 5½c and one 7c. As to the amount of waste usual in spinning by hand six replied from 1 to 2 per cent; six, 3 to 4 per cent; nine, 5 to 6 per cent, and one, over 10 per cent. It would appear, therefore, that the average or generally accepted cost of spinning by hand would run, under normal conditions, from 2 to 3c per lb., and the average waste in the neighborhood of 5 per cent.

Those who use the machine spun oakum have neither of these difficulties to contend with as is instanced by a few of the replies given herewith. These are only a few examples of many others too numerous and lengthy to quote here:

"Spun giving entire satisfaction. Contemplate doing all our calking with the spun."

"Under no circumstances would we stop using the spun."

"No reason to use other than your spun."

"I consider your new best spun the best I have ever used."

"Your machine spun first class in every respect, and way ahead of the unspun oakum."

"We consider it pays to use the machine spun."

"Your machine spun oakum is very economical and the quality A-1."

It would seem from these statistics that it would be much more economical for the ship yards and dry docks to purchase the machine spun oakum at a higher original cost than the unspun, taking into consideration the cost and waste in spinning by hand.

Nicholson Ship Log

The Nicholson Ship Log Co., of Cleveland, has installed its ship log on a number of vessels in merchant service both on the coast and Great Lakes as well as in the vessels of various navies, including the United States navy, Russian navy, Italian navy, German navy and Japanese navy. It has been adopted pretty generally by the passenger lines of the Great Lakes and has proved eminently serviceable. It will in all likelihood be installed on some of the bulk freighters this season. A reliable speed recorder would have been of great helpfulness to many of the freighters that were out in the November storm in determining their probable location. It is quite possible to install it now in bulk freighters, as provision can be made to draw in the intake tube in shallow waters or the sea locks can be placed high enough in the bilge to prevent fouling. The recorder shows the speed per hour on a dial and records this speed on a chart for every minute of the trip, thus furnishing invaluable data for future reference. The device is entirely automatic and requires very little attention beyond the daily winding of the clock in the pilot house and changing the paper record.

A New Sea-Going Tug

The Erie railroad has just placed in commission the new all-steel seagoing tug Albert J. Stone, named for the general manager of the road. The Stone was built by the Staten Island Shipbuilding Co., Port Richmond, Staten Island, to plans and specifications by Babcock & Penton, New York and Cleveland, and is 120 ft. in length, 28 ft. beam, 14 ft. 9 in. deep. The machinery consists of a triple-expansion engine with cylinders 15 in., 24 in., 40 in. diameter, 28-in. stroke, with independent condenser and circulating pump and attached air pump. Feed, donkey, sanitary and fire pumps are of Blake pattern.

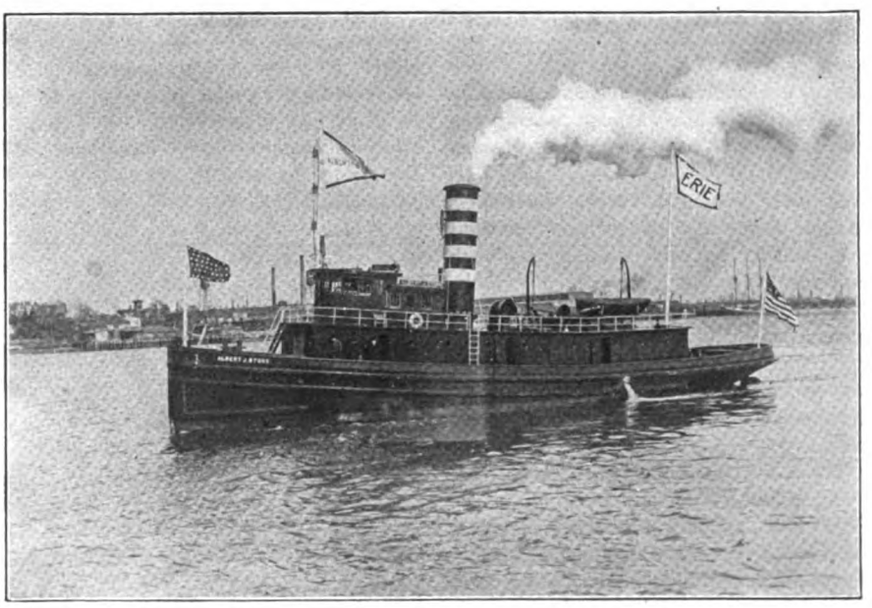
The boiler is 14 ft. 9 in. diam., 10 ft. 6 in. long between heads, with three 44-in. Morison furnaces. The working pressure is 180 pounds.

Auxiliaries include electric lighting plant with search light, Hyde steam windlass forward, steam steerer and Hyde system gypsy aft for handling tow lines.

Bunker capacity for 150 tons and fresh water tankage for 60 tons are provided. Welin quadrant davits are fitted for handling two boats.

Captain and mates are quartered in the texas, and the engineers, oilers and deckhands in the forward end of deck house. The galley, dining room and refrigerator are also located in this house. The firemen are quartered in the forecastle. The Stone is designed for towing coal barges in the Boston trade outside Cape Cod, and has proven herself a very satisfactory and able craft. In the judgment of New York marine men, she is one of the finest all-round tugs on the coast.

The Keystone Hindley Gear Co., 704 Pennsylvania building, Philadelphia, Pa., have compiled a manual of standard Keystone-Hindley gears, showing various combinations of diameters and ratios suitable for the transmission of from three to 50 H. P. under various conditions and for a variety of purposes. The information should be of assistance in the intelligent application of worm gear transmission.



SEA-GOING TUG ALBERT J. STONE

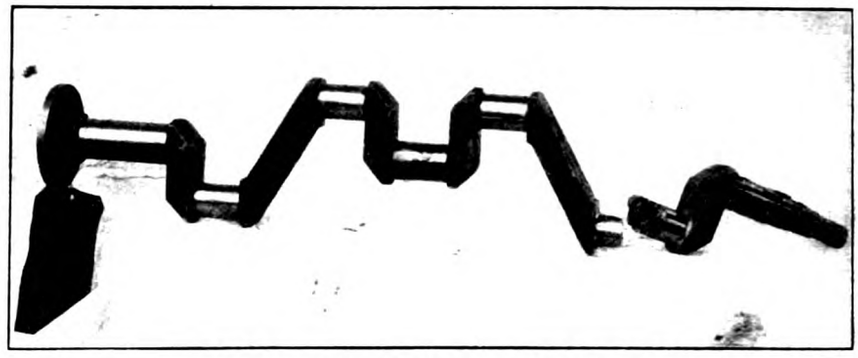
Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Electric Arc Welding for Marine Repairs

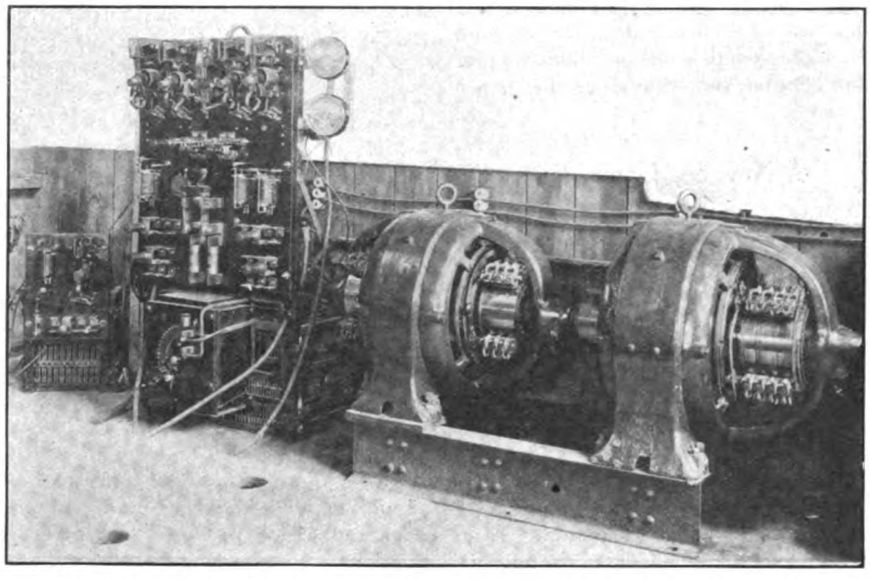
One of the greatest needs in the marine field has been suitable means for making repairs, rapidly, economically and conveniently. Of the various systems developed during the last few years for this purpose, the electric arc welding system of the C. & C. Electric & Mfg. Co., Garwood, N. J., meets this requirement in all three respects. Several of the leading ship builders and marine repair companies have adopted this apparatus after exhaustive comparative tests and the results have been highly gratifying.

The use of the electric arc as a source of heat for depositing metals is quite old, but its commercial development has taken place within the last decade and the C. & C. company were the pioneers in this field. They began developing apparatus especially designed for this purpose nearly ten years ago and perfected their present system over seven years ago. Patents were issued covering their system of automatic control for each of the welding circuits, thus giving each operator absolute control of conditions in his own circuit without interference by any other operator working from the same machine, and making possible the operation of any number of circuits from a single generator.

The C. & C. system of electric arc welding is based primarily upon the use of a specially constructed, low-voltage, direct-current generator driven by any suitable means, such as a motor, steam engine, gas engine, etc., together with the necessary equipment for controlling the welding outfit and the various welding circuits. One of the special features of the C. & C. system lies in the use of separate control panels for the machine and for each of the welding circuits, thus making it possible to locate the welding generator with its control panel wherever desired and placing the welding panels near the jobs to be done. A distribution circuit is run from the main control panel out into the shop, or along the pier or even through a vessel, and the welding panels tapped into this circuit, the same as would be done when connecting up an equivalent number of electric motors. From these welding panels two cables are carried, one of which is attached to the piece worked upon, and the other to a suitable holder for the electrodes with which the work is done. Upon each welding panel is mounted the equipment for their patent system of automatic control for each welding circuit.



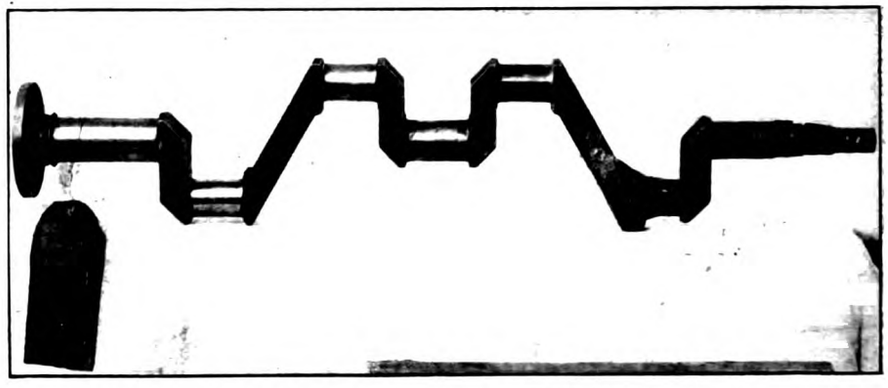
BROKEN GAS ENGINE CRANK SHAFT



WELDING MACHINE WITH CONTROL PANEL AND WELDING PANEL

Extreme Flexibility

One of the greatest advantages resulting from the use of the C. & C. system of electric arc welding lies in its extreme flexibility, as it may be used on sheets, tubes, castings or forgings of iron, steel, copper, aluminum and the various alloys of these metals. One of the most important applications, however, is for boiler repairs. Work of this kind can be done by merely drawing the fires and without dismantling. On work of this class the welding is done by using an electrode consisting of wire of the proper composition, usually soft steel, and the work is done by merely attaching a lead from one side of the electric circuit to the boiler by any suitable means and drawing the arc between the job and the electrode, thus enabling the heat of the arc to fuse the electrode into place and fill up the opening. This method of welding can be used for caulking leaky



GAS ENGINE CRANK SHAFT AFTER WELDING

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

seams, mending cracked plates, building up corroded plates, caulking leaky rivets, welding in the flues, etc. The last operation is quite important although very simple, because leaky flues are sometimes very mean things to handle. The most approved method and the one in use on practically 2,000 boilers today consists in expanding, beading and prossering the flue in the usual manner and then going around the edge of the bead where the tube has been flanged over and depositing metal along the edge, thus tying the tube and the flue sheet together and making a joint which is both tight and strong.

Caulking Plates

This system is also applicable for caulking the plates of steel vessels, welding the framework, caulking the deck seams when made of steel plates, repairing broken shafts, propellers, stern posts, rudders, engine frames, cranks, connecting rods, cylinders, and in fact all classes of repairs as well as making joints in new construction. This will no doubt appeal to some of our readers as being a very radical step to be taken by the average marine engineer, and this is undoubtedly true, but the fact remains that this is being done today and that those concerns who are using the C. & C. automatic system of electric welding have a great advantage over their competitors.

The United States Steamboat Inspection Service sanctions the use of electric arc welding for boiler repairs, for caulking seams, welding short cracks in plates, building up corroded surfaces of moderate areas, etc., and at their last meeting in Washington decided to reduce their restrictions and allow a more general application of electric welding on vessels coming within their jurisdiction. This is a step in advance and there is no doubt that the time will come when a free hand will be given ship owners in this country to have practically all kinds of electric welding done, as is the case in Germany and other foreign countries today. America is really behind the world in this respect, and it seems too bad that vessel owners and operators should be so handicappd. In view of the rapid adoption of the C. & C. electric arc welding outfits for marine repairs during the last year or two, and especially during the past winter, the barriers of ultra-conservatism will no doubt soon be broken down and the field thrown open.

All marine men know the great losses resulting today from delays in getting repairs made, as well as the enormous cost of performing comparatively simple operations. For instance, it seems like robbery to charge $25 or $30 to weld around a fire door in a boiler, and yet this amount is being charged by a certain repair man today. The actual cost of performing this operation should not exceed 50 per cent of that sum if done with C. & C. apparatus. Broken crank shafts may also be readily repaired, regardless of their size or composition or where the break may be located. A shaft 10 inches in diameter can be welded and refinished in one day. The C. & C. Co. will be glad to recommend a reliable repair man to any shipowner or operator who may be in need of quick repairs which will not give future trouble and which can be made at reasonable cost.

This system is not limited to marine repair yards or to ship builders, as shipowners are beginning to see the advantage of having an outfit of this kind on all of their more important docks and piers, and some of them are installing moderate sized outfits directly on their vessels in order that repairs can be made while at sea and when in foreign ports. A number of shipowners have installed other types of welding systems on their vessels and other places, but the expense of operation is so much greater than with the electric arc system that the slightly increased cost is more than justified by this item alone. On the other hand, the convenience of operation of the electric system is much greater, as work can be done wherever cables may be carried, and it is possible to make welds so much softer than gas welds that they are very easily machinable. This is especially important when making repairs on cast iron parts, and the C. & C. Co. guarantee that they can successfully weld cast iron and have the work so soft that it can be machined as readily as the balance of the casting.

Marine Repair Companies

Among the marine repair companies using the C. & C. apparatus may be mentioned the Empire Repair & Electric Welding Co., Brooklyn; Algiers Iron Works, New Orleans; Alex. McKay, Quebec; Great Lakes Dredging Co., Fort William, Ont.; Siemund-Wenzell Electric Welding Co., New York, and various others. Among the ship builders are Wm. Cramp & Sons, Harlan & Hollingsworth Corporation, Manitowoc Ship Building & Dry Dock Co., and the Staten Island Shipbuilding Co. and among the vessel owners are the United States Navy; Jos. M. Clark & Co., Norfolk, Va.; Department of Marine and Fisheries, Canadian government, Sorel, Quebec, etc.

A great deal has been published on the subject of electric arc welding which has been very misleading. For instance, the statement is frequently made that it is necessary to use specially prepared electrodes for all kinds of work in order to secure the best results, peculiar types of electrode holders in order to do work overhead successfully, and in various other ways the art of using the electric arc for practical welding has been made to appear very mysterious. The claim has also been made that expert operators are required in order to do electric welding successfully. The fact of the matter is that with the proper system of welding, and suitable apparatus for working in accordance with that system, the personal element is eliminated to a very large extent, thereby making it possible for any man of average judgment to do electric welding successfully. Owing to the automatic control system of the C. & C. Electric & Mfg. Co., they will guarantee to instruct any man of ordinarily good judgment to do electric welding successfully within a few days. Thus they bring to their customers not alone what is gradually becoming accepted to be the best welding system on the market, but also bring a quality of service which cannot be duplicated elsewhere. Owing to their long experience in this field, covering every class of manufacture and repair, they are able to assist their customers in solving any problems which may arise.

Branch Office

The C. & C. Co. have district offices in all the principal ports on the lakes, as well as on the sea coast, and complete information in regard to the apparatus may be obtained from their offices in New York, Boston, Philadelphia, Cleveland, Chicago, Milwaukee, Norfolk, New Orleans and San Francisco.

The marine department of the New York Central Lines, through Walter B. Pollock, has given contract to W. & A. Fletcher Co., Hoboken, N. J., for the construction of a double-deck screw ferry boat to be 183 ft. long, 40 ft. beam and 16 ft. deep.

The bid of the Bath Iron Works, Bath, Me., for installing a steel mast, iron work, hoister, etc., on the lighthouse tender Mayflower at a cost of $1,369 has been accepted. The Mayflower is employed in the second district with headquarters at Boston.

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Safety First

The Manitowoc Ship Building & Dry Dock Co. and Manitowoc Boiler Works Co., both of which are under one management, have organized a safety first department for the purpose of accident prevention among the employes.

A central safety committee was appointed consisting of a member of the organization, one of the timekeepers and four of the superintendents and foremen, as follows: Elias Gunnell, chairman; Walter Dittmar, secretary; E. E. Morris, J. J. Norris, George Boehringer, August Behm.

Once a week each superintendent or foreman on this committee files a written report making recommendations and suggestions as to additional safety appliances required. These reports are given full consideration by the committee and if acceptable, acted upon. One of the chief duties of this body is to thoroughly consider and discuss such recommendations as may be made by the workmen's committee described below.

This committee consists of employes from both plants as follows: William Hendries, chief inspector; Otto Weis, Herbert Dow, Chris Kansier, Geo. Lee, Max Aumann, Frank Liska.

It is the duty of the workmen's committee to investigate accidents to employes and submit a written recommendation to the central safety committee so as to avoid a recurrence. This investigation service is extremely important.

It is the duty of the inspector to make periodical inspections of the different plants and departments, paying particular attention to improvements of safeguards and additional safeguarding where necessary. He reports in writing each individual inspection to the central safety committee, stating his recommendations.

In addition to the above inspection the members of the workmen's committee make joint inspections every two or three weeks and file a written report either to the superintendents or the Central Safety Committee. They look for defects in buildings or equipments, unsafe practices by the workmen in doing their work and any other conditions in the plants which might be the cause of accidents.

The make-up of this committee is changed frequently with the result that in time every man in the employ of the companies will have been a member. After an employe has served his time on this body he does not drop the work but continues to make suggestions as to the future prevention of accidents.

A large bulletin board has been posted in conspicuous places at the plants. On these boards are placed announcements regarding changes of committees, awards and special mention of good suggestions, etc. In addition to these, literature is posted at frequent intervals illustrating and describing accidents together with the methods of prevention. All workmen are furnished with a hand book by the company offering rules and suggestions for the prevention of accidents. They are also informed from time to time as to the progress made in the work.

In order to receive suggestions from employes as to safeguarding equipment, etc., "Suggestion Boxes" have been placed at the plants and all employes are at liberty to submit in writing any suggestions that they might have relative to the prevention of injuries.

Each member of the central safety committee is supplied with a gold enameled button which is worn constantly.

Each member of the yard committee is furnished with a white button and as the service of members expires they retain their button so that eventually all employes will possess a white button, signifying that they are active members of the yard committee.

All employes making worthy suggestions as to how future accidents can be prevented are given an "award" gold enameled button.

A great deal of interest is being shown by the men in this undertaking and a substantial reduction in the number of accidents is looked forward to for the next year.

Cramps, Philadelphia, are remodeling the City of Bangor, of the New England Steamship Corporation's fleet, as a result of an extensive fire aboard. The joiner work, where destroyed, has been rebuilt, a new deck house erected and the vessel generally overhauled and refinished. The El Siglo, of the Southern Pacific Co.'s fleet, is being reboilered and having the structural work in the vicinity of the boiler foundations repaired. The Matanzas and Bayamo, of the New York & Cuba Mail Co.'s fleet, are having complete cargo ventilating systems installed, including the power plant for driving the fans.

The battleship Rivadavia, built by the Fore River Shipbuilding Corporation for the Argentine, made a maximum speed of 22.56 knots an hour over the Rockland course March 11, exceeding her contract requirement of 22½ knots.

Pivot Balance Hatch Cover

Captain Arthur N. McGray, 119 West Seventy-first street, New York, who is master of the steamer Herman Frasch, of the Union Sulphur Co.'s fleet, has patented a pivot balance hatch cover and is about to put it on the market. In ships with 10 ft. 6 in. or 12 ft. openings the cover would be all in one solid piece with channel bars riveted to the upper side of the covers fore and aft about 3½ ft. apart. On the under side all the way around would run another channel bar (channel down) mitered at the corners. Into this channel is fitted a heavy strip of coarse felt. The channel fits exactly over the half rounds of the coaming, so that not only do the hatch bolts draw the cover down watertight, but the sides of the channel act as a strengthener to the side and end coamings.

Along the sides of the coamings, fore and aft, runs a light trackway of steel down near the deck. Midway of the fore and aft length of the cover there is riveted to its upper side an ordinary axle, carrying a small wheel, which rests upon the trackway mentioned. When the cover is at its normal position the wheel rests on a "filler-piece" which is cut out of the trackway. This filler piece is supported on a kind of jack screw block which is coarse threaded enough to move it up and down quickly by a rachet handle. Thus the covers are lifted off the coaming and trundled aft into the space between the hatch coamings; or to replace the cover trundle it forward on its wheels (one man on each side) until it is directly over the coamings; then lower away the rachet screw until the cover rests on the coamings, throw up the hatch bolts into the forks and set up the butterfly nuts. The covers could be connected together by iron bars and when lifted clear of the coamings by the rachets could be hauled forward or aft by a small winch simultaneously. It is estimated that six men could put on and batten down ready for any kind of weather 32 hatches in a half hour, or take them all off in 20 minutes.

The steamship Toledo of the Sun Oil Co. is expected at the yard of the Harlan & Hollingsworth Corporation, Wilmington, Del., early next month to be cut in two and lengthened. The Toledo was built by the Craig Shipbuilding Co. in 1902, and had an original length of 250½ ft.

Generated on 2024-07-27 01:53 GMT / https://hdl.handle.net/2027/mdp.39015013745511
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN